PAPER TRADE JOURNAL

OCTOBER 31, 1960

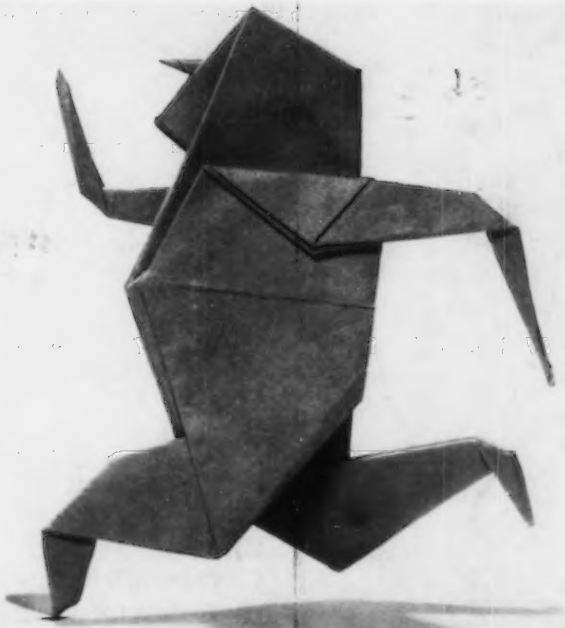
Are we over-expanded? You may be surprised by H. Whitaker's reply

J & J Rogers rehabilitates 57-yr. old mill and triples tonnages

What's new in automatic control of continuous refining variables

New stack for Oxford's recovery boiler poses unusual problems

Paper sculpture by Giuseppe Baggi



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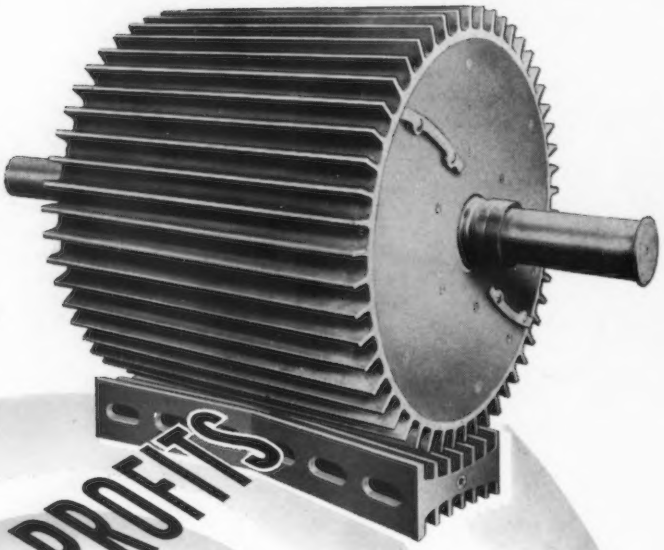

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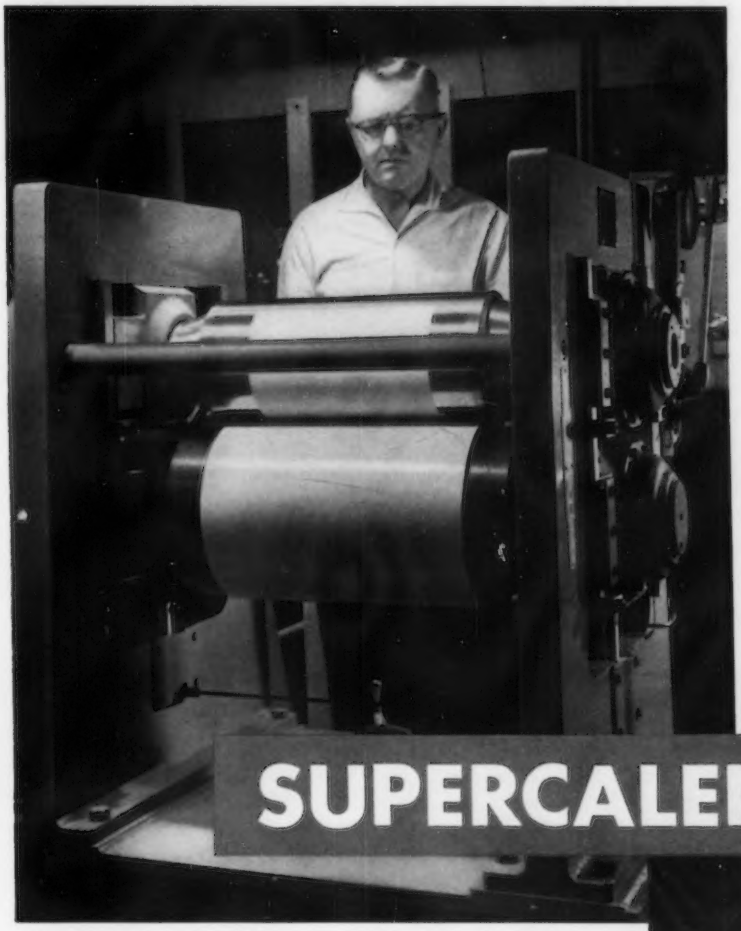

Supercalendering is one of the important steps in the preparation of test samples for use in the study of characteristics of coated paper.

SUPERCALENDERING

Characteristics of coated papers—uniformity and smoothness of surface, gloss, opacity, printability, and show-through are studied continuously in the paper laboratory of The New Jersey Zinc Company. An important phase of the program involves a study of the effect of supercalendering on such properties of coated papers pigmented with various types of titanium dioxide.

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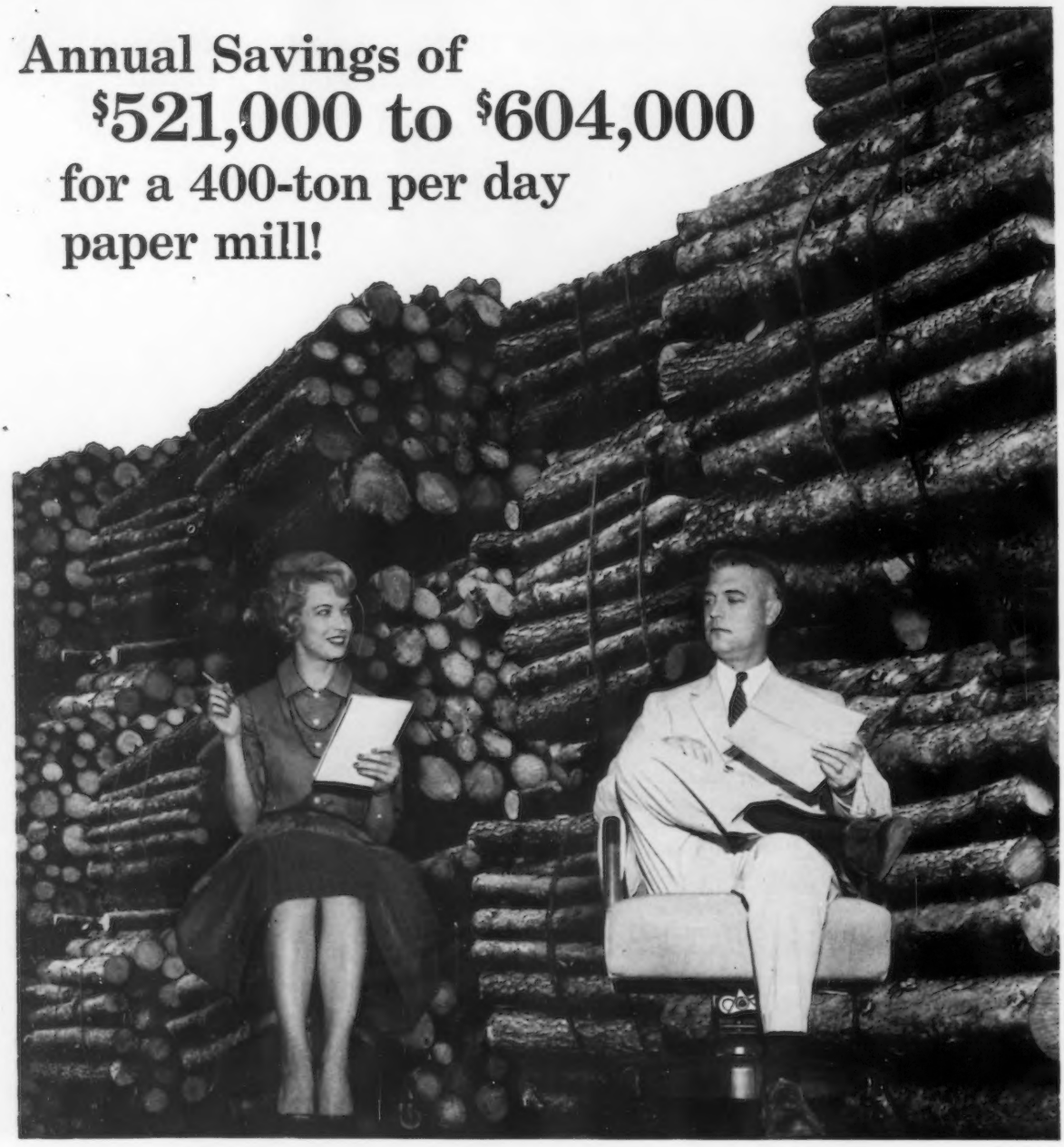

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PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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Week of October 31, 1960—Vol. 144, No. 44

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Some Problems of Our Industry and What Should Be Done About Them 30

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REMEMBER THESE DATES

November 14-16, National Paperboard Ass'n Annual Meeting, Waldorf Astoria Hotel, New York

January 24-27, Technical Section, CPPA Annual Meeting, Queen Elizabeth Hotel, Montreal, Canada

February 20-23, Paper Week in New York

SUBSCRIPTIONS →

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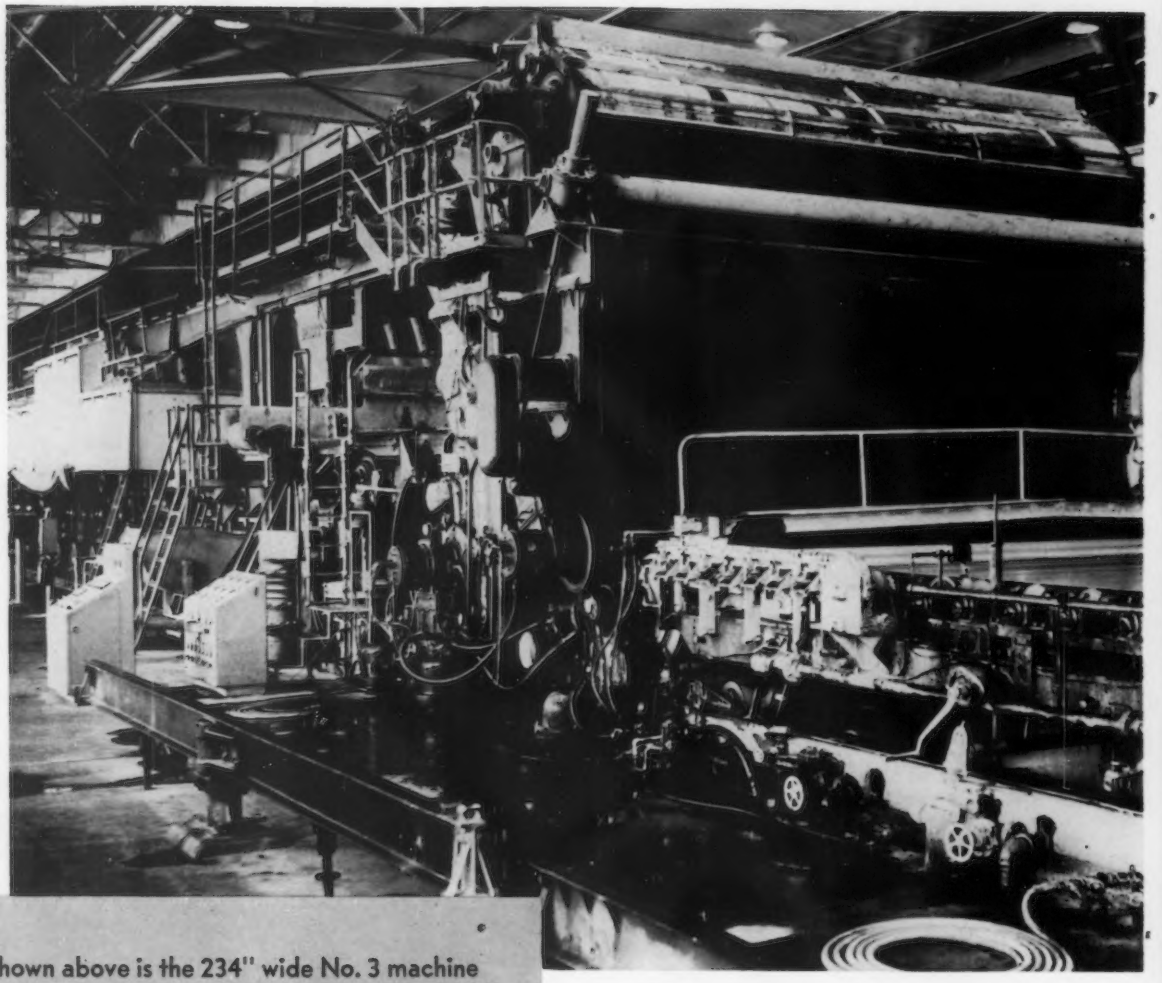

Shown above is the 234" wide No. 3 machine installed by Crown Zellerbach Corporation's Port Angeles, Washington mill in 1923. The 164" wide No. 2 machine was installed in 1921. A suction transfer press section was added to the No. 2 machine in 1953 and to the No. 3 machine in 1956. Both operate at 1,800 f.p.m. The 164" wide No. 1 machine, installed in 1920, runs at 1,400 f.p.m. without a suction transfer.

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Our objective: to continue the same consistent service in future years.

Crown Zellerbach Corporation's Port Angeles Washington mill produces over 500 tons of "Crown News" every 24 hours to help meet the newsprint requirements of more than 400 newspapers.

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Trends

Good Rates for Mills in October

During the first half of October paper mills ran at 93.6% of capacity and paperboard mills at 93%. These figures compare with 97.6% and 97.5% for the same period last year. While below 1959, these figures for the first half of this month represent near normal rates and certainly not recession or depression conditions.

Gentle and Blunt Words of Warning

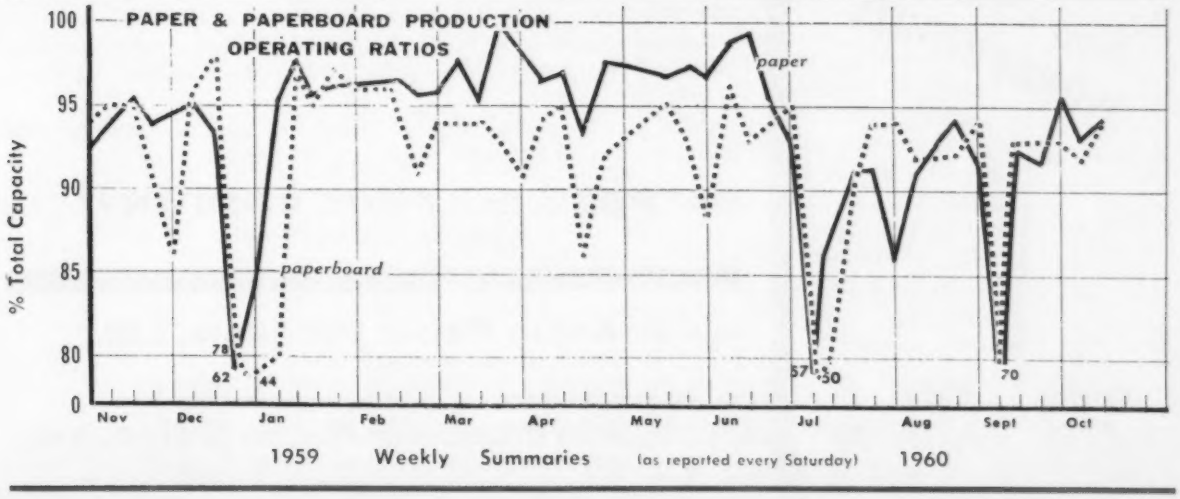
Paper and board industry capacity is running two to three years ahead of consumption states Howard E. Whitaker in an article beginning on page 30. Mr. Whitaker suggests that a hold-up in future expansion would be advisable.—We will be more blunt. We can never expect to get a reasonable price for our pulp, paper and board and reasonable earnings for shareholders, as long as a considerable number of companies insist on expanding output so far ahead of demand. The blame rests equally with existing companies and newcomers to our industry. As Mr. Whitaker implies, each company involved in a major expansion thinks there are special circumstances justifying its action but not that of its competitors.

New News Records For September

North American newsprint output hit another new record in September and was 1.4% above September 1959, with U.S. production up 8.3% over last September and Canadian up 7.1%. For the first nine months output of newsprint in North America was at a new high for the period and was 6.2% above the first three quarters of 1959 with U.S. and Canada up 4.8% and 6.6% respectively.

S & P Presents Mixed Paper Picture

Improvement in demand for paper indicated during the fourth quarter of 1960 suggests a total production for the year modestly above the 1959 peak of 34 million tons, states the late October report on the paper industry by Standard and Poors. The report goes on to suggest that demand in early 1961 may not match the past-steel-strike demand of early 1960. It predicts that paper industry profits in 1960 will fall short of 1959 and the outlook for improvement in early 1961 is unlikely.



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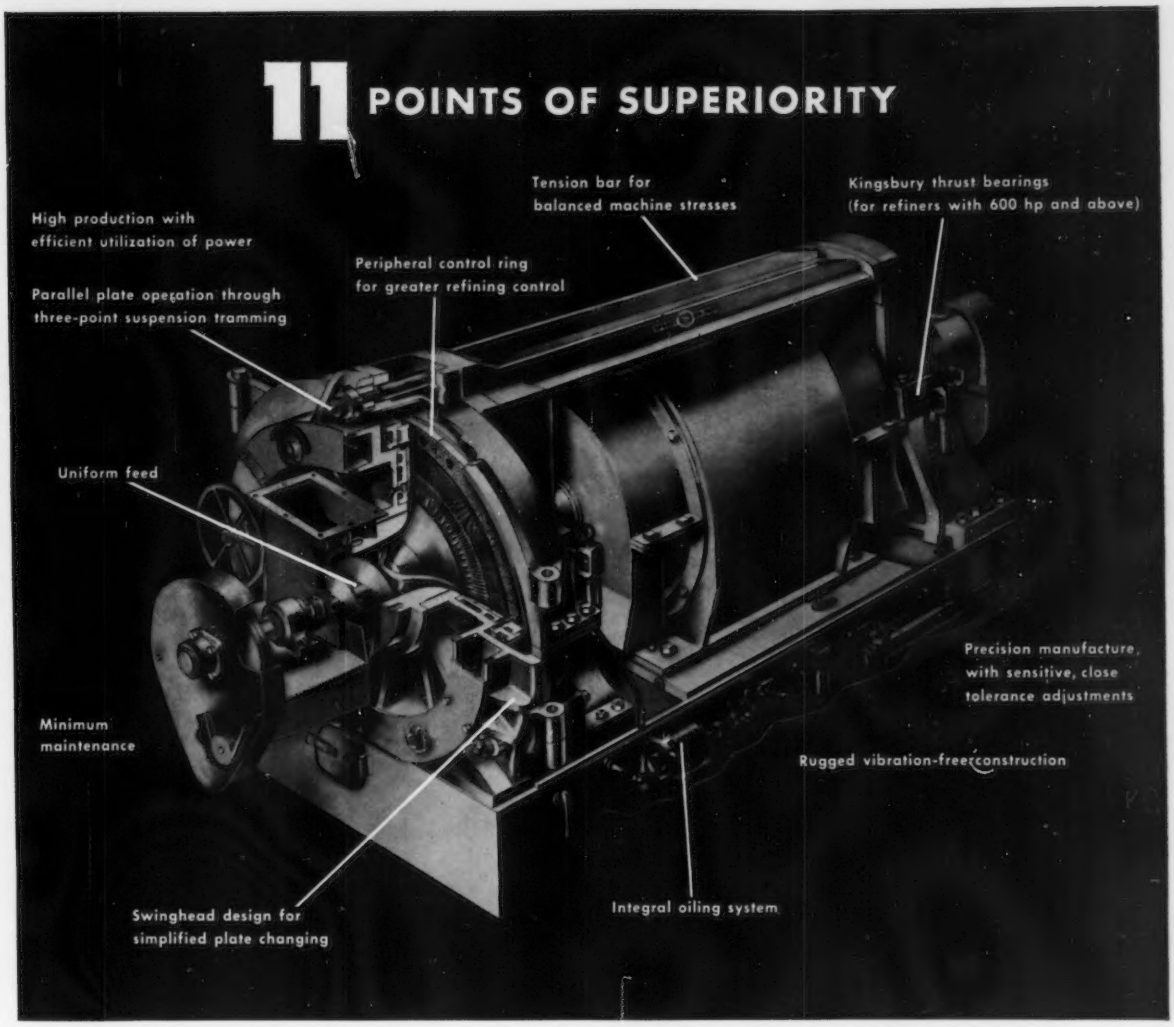
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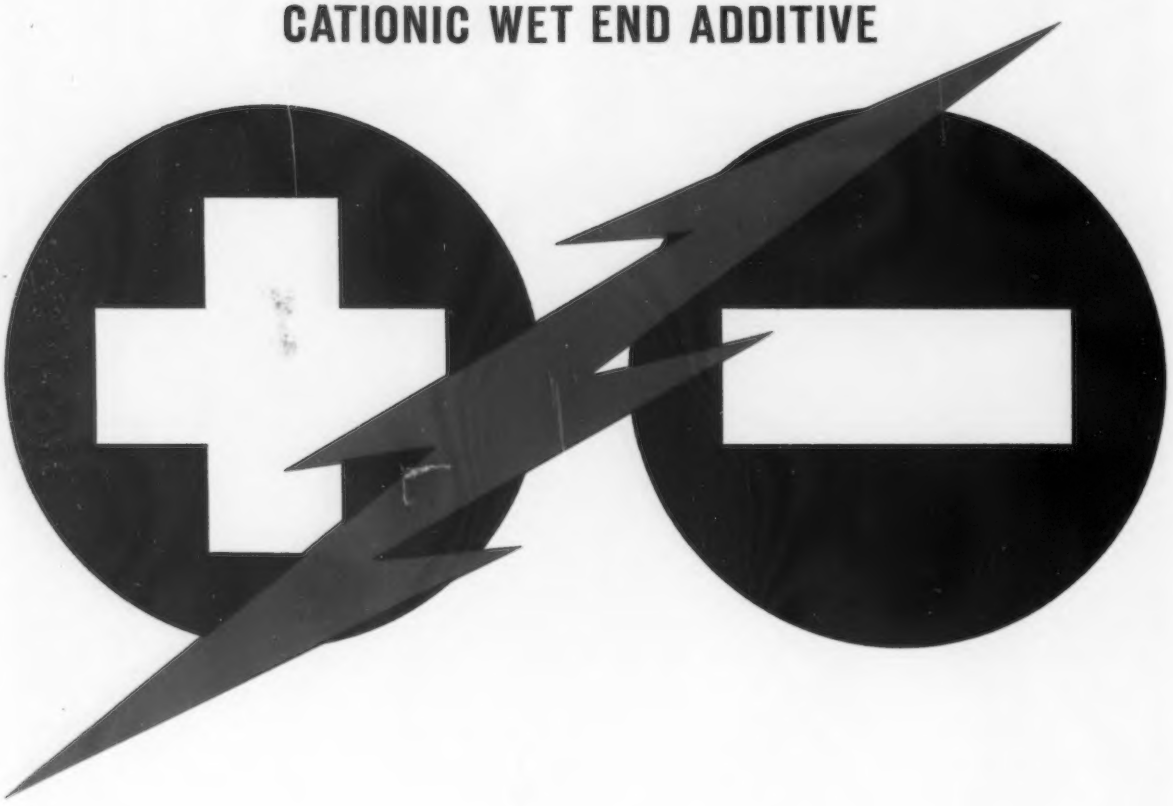

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PAPER TRADE JOURNAL
WEEK OF OCTOBER 31, 1960

Groundbreaking Ceremonies for Southern Land, Timber Mill

At Cedar Springs, Ga., on October 20, ground was broken at a site on the east bank of the Chattahoochee River where a $50 million pulp and paper mill will be constructed.

Senator Herman Talmadge was the principal speaker at ceremonies for the new plant, to be built by Southern Land, Timber and Pulp Corp. of Atlanta, Ga.

Ground-breaking ceremonies for the multi-million dollar pulp and paper mill were held even though voters of Early County have not yet agreed to issue revenue certificates to finance construction of the mill.

Under proposed plans, Early County will issue between $45 million and $50 million worth of revenue certificates to build the plant, and then lease it to the Southern Land, Timber and Pulp Corp. Early countians will vote on whether or not to issue revenue certificates in the general election November 8.

The site of the proposed mill is at Cedar Springs, 16 miles southwest of Blakely, the county seat of Early County.

John J. Neely, president of Southern Land and Timber, said the company, organization of which was begun three years ago, has now sold some $20 million worth of stock at $2 a share and has another 2½ million shares to sell. It has acquired more than 120,000 acres of timber land, he said, and its directors and stockholders control more than 400,000 acres in additional land. It was stated the mill will produce 600 tons per day of kraft liner board.

New Pulp and Paper Mill Planned for India

Financing and construction plans are complete for the first pulp and paper mill in Madras State, India. Seshasayee Paper and Boards, Ltd., will build a 12 million dollar integrated plant to produce 60 long tons per day of printing and writing papers from bamboo and sugar cane bagasse pulps.

A loan of 20 million rupees, recently authorized by the Export-Import Bank of Washington, completes the financial arrangements, and construction will begin immediately under a contract with Parsons & Whittemore South Asia Co., a member of the Parsons & Whittemore-Lyddon Organization. The balance of the financing was obtained through a loan of 5,000,000 rupees from Industrial Credit & Investment Corp. of India in Bombay and through subscriptions of share capital by Seshasayee Brothers (Private), Ltd., and other private interests in India and North America.

The Parsons & Whittemore South Asia Co. is directing overall planning, engineering, equipment supply, erection, and start-up of the mill. Orders have been placed for the principal equipment, which will be built mainly in the United States by four divisions of the Black-Clawson Co.

Under the new Five Year Plan for industrial expansion, the Indian Government expects to double its present rate of paper production to an annual total of 700,000 tons. The establishment of Seshasayee Paper and Boards, Ltd., is one of the first steps in this program.

A Parsons & Whittemore management and engineering team has been established in Madras to execute the project. Completion of construction is expected by the fall of 1962.

CONTINUOUS PULPING

The pulp mill will be equipped with a Pandia continuous pulping system. It consists of two 42-inch diameter digester tubes with separate screw feeders for bamboo and bagasse. Caustic and modified kraft cooking will be employed. A three-stage bleach plant is provided and a complete chemical recovery system. Twin high density storage lines are established for the bamboo and bagasse pulps.

The Shartle Division of Black-Clawson is furnishing Hydrapulpers, jordans, Hydrafiners, Selectifier screens, and agitators for a complete stock preparation system.

TWO PAPER MACHINES

Two fourdrinier paper machines, one with a Yankee dryer for machine glazed products, are being built by the Paper Machine Division of Black-Clawson. Each will carry a 136-inch wire and be furnished complete with headbox, calender, reel, and winder, and with a hood and vapor absorption system built by Black-Clawson's Air Systems Division.

Western Kraft to Close Kalof Port Hueneme Mill

Plans to stop production and close the box manufacturing plant at the Kalof paper mill in Port Hueneme were announced by Western Kraft Corp.

Closing of the plant came a month after Western Kraft acquired the Kalof interests on a 10-year lease. Kalof had closed its paper mill in August.

One or two machines in the plant will be shipped to any of three other Western Kraft plants in the Los Angeles area. One paper machine already has been shipped to Richmond. All other equipment will be kept in the building.

PP&L Completes Wells In Coos Bay Dunes Area

Three additional wells have been completed by Pacific Power & Light Co. for the industrial water system being constructed in the dunes north of the bay to serve the Menasha company's new pulp and paper mill. The wells are located north of earlier wells which were installed to test and prove the water production capabilities of the dunes area.

Bemis Bag to Expand and Modernize

A plant expansion and modernization program for Bemis Bro. Bag Co. totaling more than $1,200,000 is announced. Principal features of the program include a new plant near Muskegon, Mich., for the manufacture of Tekmold, and plant expansions in St. Louis, Mo., Claremont, N. H., Flemington, N. J., and Vancouver, Wash. About half of the total expenditures will be devoted to new papermaking and bag converting equipment installations in these locations.

The new Tekmold facility will be completed by the end of this year. Tekmold is a molded pulp produced in a variety of protective forms to package delicate instruments, radios, movie projectors, appliances, etc. It also is formed into pots and planters, which are widely used by florists and nurseries. The present Bemis Tekmold plant is in Minneapolis.

In Vancouver, the company is adding a 32,000-square-foot warehouse adjoining its plant. This will release warehouse space within the plant for expanded production, and the company plans to install new multiwall bag equipment.

At its Claremont paper mill, only a small plant addition will be made. The principal feature of the Claremont papermill program is a $250,000 stock preparation installation which will increase capacity by about 10 per cent.

In St. Louis, the Bemis Visinet Mill, producing woven paper and textile open-mesh material, is completing a $165,000 program which adds 13,500 square feet of integrated floor space and new finishing facilities. The Flemington program includes a 10,000-square-foot plant addition and $125,000 in added production equipment.

Financing for Keys Fibre West Coast Plant Approved

Ralph H. Cutting, president of Keyes Fibre Co., manufacturer of molded pulp products, announced that the stockholders of the company at a special meeting held October 20 at Waterville, Me., approved an issue of $10,000,000 of subordinated debentures of the company with warrants for the purchase of common stock for the purpose of providing funds to construct and equip a new plant to be built near Sacramento, Calif., and for other corporate purposes.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending October 15, 1960, at 94.2 per cent, compared with 92.9 per cent, revised, for the preceding week. The ratio was 97.1 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending October 15, 1960, at 94 per cent, compared with 92 per cent for the preceding week and 98 per cent for the corresponding week a year ago.

(Detailed Statistics on page 44)

N. A. Newsprint Production Hits September Record

Production of newsprint in North America during September 1960 amounted to 732,173 tons—a record high for this month—and was 7.4 per cent above the September 1959 volume. Shipments totaled 757,889 tons in September 1960 and were 5.8 per cent greater than shipments in the same month of 1959. According to the Newsprint Service Bureau, output in the United States of 161,596 tons surpassed that in any September on record while shipments totaled 167,947 tons, and respective gains over September 1959 amounted to 8.3 per cent and 7.9 per cent. Canadian production amounted to an all-time September high of 570,577 tons while shipments totaled 589,942 tons, which represents increases over September 1959 of 7.1 per cent and 5.2 per cent respectively.

Production of newsprint paper in North America in the first nine months of 1960 amounted to a record 6,530,035 tons, which was 380,194 tons or 6.2 per cent above the level attained in the same period of 1959. Cumulative output of United States mills at the end of September 1960 attained a historical high for this period of 1,520,837 tons and was 70,214 tons or 4.8 per cent more than the volume produced a year earlier. Canadian production totaled 5,009,198 tons—an all-time peak level—and was 309,980 tons or 6.6 per cent greater than in the first nine months of 1959.

North American manufacturers' stocks on September 30, 1960, aggregated 237,092 tons compared with 262,808 tons on the last day of the preceding month and 228, 860 tons at the end of September 1959. The continental total was composed of 35,679 tons and 201,413 tons held by United States and Canadian mills respectively, and inventories were higher than a year ago by 14,348 tons in the former instance and lower by 6,116 tons in the latter.

Maine-N. H. TAPPI Fall Meeting

The Fall Meeting of the Maine-New Hampshire Section of TAPPI will be held in the Mayfair Room of the Lafayette Hotel, Portland, Me., November 4 and 5, 1960. The tentative program for Friday, November 4 is as follows:

2:00 p.m.—Technical Program.

1. "Surface Treatment of Paper and Board with Starch and Pigment" by J. E. Killinger and John B. Bainbridge. Presented by Paul J. Shirley, Jr., of Penick & Ford, Ltd.

2. "Recent Development in Research on Accostrength 2386" by Walter Reynolds of American Cyanamid.

3. "CMC as a Paper Machine Additive" by E. J. Barber and R. B. Teeple of Hercules Powder Co.

A question, answer and discussion period will follow the papers.

7:30 p.m.—Banquet speaker will be John H. Heuer, vice president and manager of manufacture of Great Northern Paper Co.

SATURDAY, NOVEMBER 5

9:30 a.m.—Plant visits to S. D. Warren Paper Co., Westbrook, Me., and to Guy Gannett Publishing Co., Portland, Me. Mill visits can be arranged to the Waterfall Tissue Co., Mechanic Falls, Me.

Knowlton Brothers Install Clupak Equipment

Knowlton Brothers, specialty paper manufacturer of Watertown, N. Y., announces the installation on its pilot fourdrinier of equipment to make Clupak extensible paper. Clupak, Inc., has made the equipment available to Knowlton Brothers for the purpose of studying possible applications of Clupak equipment in the specialty papermaking field.

The pilot machine with the Clupak equipment will be available to other paper manufacturers on a lease basis, so that they can explore the use of the Clupak equipment on their papers in pilot production.

Vintage Railway Car Is Executive Headquarters for Nova Scotia Pulp

A palatial, private railway car that has carried such notables as Presidents Calvin Coolidge and Theodore Roosevelt and represents one of the few authentic surviving luxury railway business cars of the Victorian era has been given a rebirth as temporary executive headquarters of a jointly owned Swedish-American chemical pulp mill now under construction in Nova Scotia.

The old, well-preserved vestige of the days of railroad empire building had been used by the Rutland Railroad of Vermont since 1915 as its president's private car. It faced a dismal future recently when the president of the railroad stated that business was so bad he could not afford to use his private car. "If anyone wants to buy a president's car, I have one for sale," he declared.

Reports of the statement immediately sparked a novel plan in the offices of Nova Scotia Pulp, Ltd., the Swedish-American company which had just started construction of a 40 million dollar plant adjacent to the tiny town of Port Hawkesbury on the Strait of Canso which separates the Nova Scotia mainland from Cape Breton Island in extreme eastern Canada. It was decided that the old railway car would be an ideal solution to the problem of providing on-the-site accommodations for visiting officials and corporation executives.

EXAMPLES like this authentic piece of mid-Victorian Americana have virtually disappeared from the American scene outside museums. This vignette of hand-carved oak panelling, stained glass ventilator windows, and mid-Victorian furnishings is still in existence as an interior section of the former private presidential railway car which is serving as the temporary executive headquarters of Nova Scotia Pulp Co. at Port Hawkesbury. Note the oriental carpeted floor, heavy plate mirror, pre-20th Century lighting fixture, and characteristic high-dome of this breed of vanishing railway cars.

Immediately following its purchase by Nova Scotia Pulp, the car was modernized in the shops of the Canadian National Railways, but the old carved oak panels, metal scroll work, and the leaded colored glass decorating the interior were all preserved intact. Old-fashioned, mid-Victorian brass beds will still be found in several of the staterooms.

The car was built on the orders of Dr. Seward Webb, son of the celebrated J. Watson Webb of the New York Commercial-Enquirer whose feuds with Horace Greeley of the New York Tribune made newspaper history in post-Civil War days. Dr. Webb had married Augusta Vanderbilt, daughter of William H. Vanderbilt, the legendary railroad empire builder, and was determined to follow in the footsteps of his father-in-law by building up his own transportation empire. He was responsible for connecting railroads between New York and Ottawa, and he acquired a number of other rail lines. The car was constructed in 1891 at the Buffalo, N. Y., shops of the Wagner Palace Car Co., which was also headed by Dr. Webb.

It is also interesting to note that Dr. Webb also acquired a controlling interest in the Cape Breton Railway in the early Nineteen Hundreds which was starting construction from a point not far from the present location of the new pulp mill. It is an unusual coincidence that the "Ethan Allen" is now reposing in the very area where it once carried Dr. Webb on his inspection trips to watch the progress of rail construction on Cape Breton Island.

The new pulp mill now under way is one of the largest industrial developments in recent years to be undertaken in the Maritime Provinces of Canada. Stora Kopparbergs Bergslags A/B of Sweden (80 per cent)

STANDING in front of the vintage private car are (from left to right): Walter W. Holland, vice president and general manager of Nova Scotia Pulp; Karl A. Clauson, president; Hakan Abenius, managing director of Stora Kopparbergs A/B and Hans G. Lindberg, woodlands manager of Nova Scotia Pulp.

and the Scott Paper Co. (20 per cent), the largest American producers of sanitary paper products, share joint ownership in Nova Scotia Pulp, Ltd. With 80 per cent of its ownership held by the Stora organization, the mill represents the largest single financial investment by any Swedish interest in North America. When it goes into production early in 1962, the mill is scheduled to produce 350 tons daily of a new type, bleached sulphite pulp developed by Stora's technologists (See PAPER TRADE JOURNAL, Sept. 7, 1959, for details of process) for making high grade papers.

The Stora organization is probably the oldest corporation in existence, with known records going back to 1288 and indications that some sort of informal organization existed as early as 1080, based on radio-active carbon analysis of old documents. Today, this giant industrial complex is still one of the leading corporations in Sweden, dealing in pulp and newsprint, steel and other metals, hydro-power production, and chemicals.

President of Nova Scotia Pulp, Ltd., is Karl A. Clauson, who also serves as president of Stora Kopparberg Corp. of New York, the North American subsidiary of Stora Kopparbergs Bergslags A/B.

PAPER PEOPLE

E. M. McCourt

G. W. Sawyer

McCourt to Retire from Consolidated Post

Earl M. McCourt, sales manager of waxing papers, paperboard, pulp and by-products, for Consolidated Water Power & Paper Co., has announced his decision to retire at the end of the year.

George W. Sawyer has been appointed to succeed Mr. McCourt as sales manager of waxing papers and paperboard. H. J. Lausman, manager of Appleton Division, will direct the sales of pulp and chemical by-products made there. Mr. McCourt will continue to serve the company in an advisory sales capacity for these products until December 31, 1960, when his retirement is effective.

Mr. McCourt, a veteran of nearly 40 years of service with Consolidated, has served in executive sales positions since 1937. He was named director of sales-service for enamel papers during that year and was instrumental in the development of the company's first national publication accounts. He continued in that capacity until 1953 when he was named sales manager of waxing papers, paperboard, and specialty products.

Mr. Sawyer has been serving the company as waxing paper sales representative since 1953. A graduate of the University of Maine with a major in pulp and paper chemistry, he began his employment with the company in 1933. He later worked in enamel paper sales-service and from 1946 to 1953 was sales representative for paperboard and waxing papers.

George D. Barron has joined Consolidated as an enamel paper sales representative. Mr. Barron was graduated from Duke University in 1955 and has since been employed in sales with Union Bag-Camp Paper Corp. He will headquarter in the company's merchant sales office at 100 Church Street in New York City.

Bowater Mersey Names Asst. General Manager

Appointment of Hugh K. Joyce as assistant general manager, Bowaters Mersey Paper Co., Ltd., has been announced by J. H. Mowbray Jones, president and general manager.

Mr. Joyce joined Mersey, now a subsidiary of the Bowater Corp. of North America, Ltd., in 1949. He was successively employment and safety supervisor, personnel manager, general executive assistant, and assistant to the general manager.

Bemis Bro. Bag Transfers Robb to Peoria Mill

Gordon M. Robb, manager of the Bemis Bro. Bag Co. plant and sales division in Houston, Tex., was transferred to the company's Peoria, Ill., plant and paper mill on November 1. On January 31, 1961, when L. J. Finn retires after close to a half century of service with Bemis, Mr. Robb will take his place as manager of the Peoria plant and paper mill.

Mr. Robb joined Bemis 43 years ago as an office boy in Houston. While working during the day, he completed his secondary education at night school and continued on with special courses in accounting, traffic and business administration at LaSalle Extension University in Houston and later attended the Institute for Management at Northwestern University in Evanston, Ill.

After 10 years in various purchasing and accounting posts, Mr. Robb became a salesman in the Houston division. In 1943, he became sales manager and, in 1951, overall manager of the Houston plant and sales division.

Weyerhaeuser Advances Three at Cosmopolis

Promotions at Weyerhaeuser Co.'s pulp and paperboard division mill in Cosmopolis have been announced by Merrill Robison, Grays Harbor manager.

Advanced to the new position of assistant technical director is Erwin H. Olson, formerly chief chemist.

Promoted to the new position of technical supervisor is Albert C. Gribos, former project chemist.

Advanced to senior project engineer is Paul E. Harrison, former project engineer.

Wayne Brown Memorial Scholarship Established

George S. Runyan, vice president of Crown Zellerbach Corp., acting in behalf of the Wayne Brown Memorial Fund Committee, has presented the committee's check for $5,000 to Dr. D. L. Helfferich, president of Ursinus College. This fund was collected in memory of Wayne A. Brown of Crown Zellerbach Corp., from his many friends in the paper and allied industries. Mr. Brown died suddenly from a heart attack on May 26, 1959.

Through the cooperation of the Kraft Paper Assn., Inc., the Sulphite Paper Manufacturers Ass'n., Inc., and The Tissue Ass'n., Inc., in all of which Mr. Brown had held important official capacities, the subscription drive for $5,000 was successfully completed.

Jack B. Cowie of the Hollingsworth & Whitney Division of Scott Paper Co., who acted successfully as chairman of the fund raising committee, is currently president of the Kraft Paper Ass'n., Inc. He has asked Ursinus College to report to that association each year on the use of the Wayne Brown Memorial

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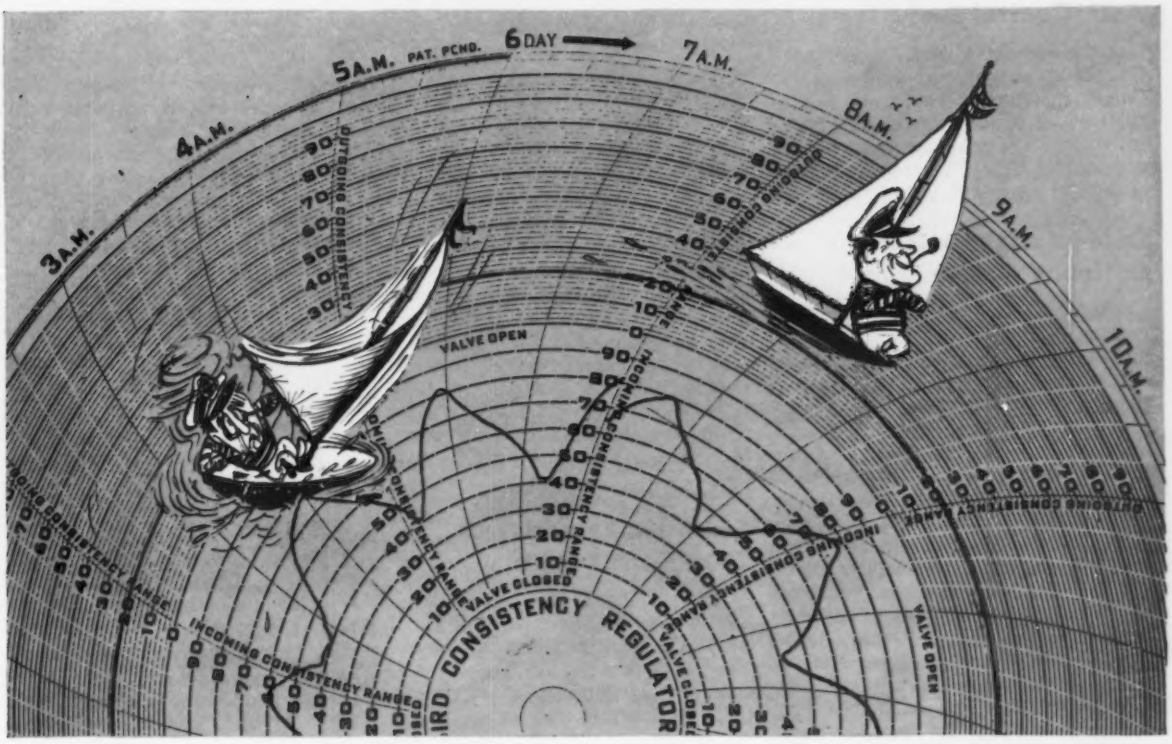

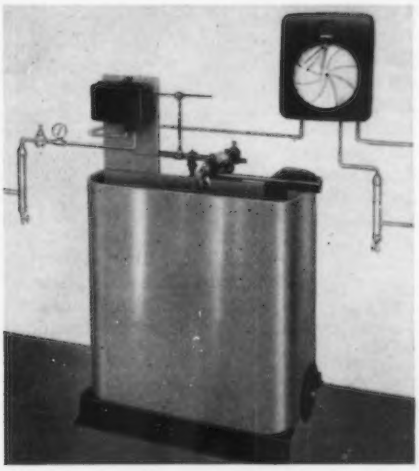

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Scholarship which report would not only keep alive Mr. Brown's memory but would, it is hoped, inspire other associations to make similar much-needed donations to educational and other worthy institutions.

PJT NEWS OF CONVERTERS

A.N.D. Appoints Cater Asst. Control Supt.

Anglo-Newfoundland Development Co., Ltd., has promoted George N. Cater, instrument engineer, to the position of assistant control superintendent. The appointment was announced by G. P. Chinn, A.N.D. general superintendent.

Duffie Assigned New Duties at Western Kraft

Western Kraft Corp. has announced changes in organizational and management fields as a result of a recent purchase of the California paper mills and corrugated container plants of Quaker Container Co. and Cadillac Container Co.

C. R. Duffie, resident manager of Western Kraft's Albany paperboard mill, will take charge of the paper mill operations of the Quaker Container Division at Richmond, Calif.

Mr. Duffie, also a vice president of Western Kraft, will handle his new duties from his Albany headquarters. Other management changes affected personnel at California plants.

Western Kraft also announced that the paper mill at its Cadillac Container Division, Oxnard, Calif., closed October 15, that a produce packaging department would be established at Vernon, Calif., and that a container development department would be started at San Leandro, Calif.

Quinn and Meehan Advance At Whiting Stationary

Paul D. Quinn, national sales manager of the Whiting Stationery Co., has been moved to the newly created post of merchandising manager.

Succeeding Mr. Quinn as national sales manager is Frederic W. Meehan, former sales manager of the Rayex Corp. in Flushing, Long Island, N. Y., who will operate out of the firm's New York City sales headquarters. Mr. Quinn will move to the Holyoke plant.

The name of the firm, formerly known as Whiting Paper Co., Stationery Division, has been changed to Whiting Stationery Co. In 1959, Whiting Paper Co. merged with the Tabulating Card Co. of Princeton, N. J., which bought all physical assets of Whiting Paper.

Diamond to Mold In Middletown

Middletown, Ohio, has been selected as the site of a new plant to be operated by the Molded Packaging Division of Diamond National Corp. The plant, which would go into operation in the spring of 1962, will manufacture molded pulp egg cartons.

The division, with headquarters in New York, has similar facilities in Red Bluff, Calif., and Palmer, Mass. It is believed that the new plant may be located on the site of the former Manchester Machine Co. factory.

Smith Paper Adds Third Coating Line

Another Egan Extrusion coating line has been added to the H. P. Smith Co. plant facilities in Chicago. The Smith firm has the largest extrusion coating capacity of any single plant in the world.

The new unit supplements two coating lines which were installed by Egan in the Smith plant in 1958.

Equipped with a turret-type flying splice unwind and winder, the coater is designed for webs of up to 48 inches. The six-inch extruder, with 20/1 LD ratio, and the laminator are highly versatile and will coat cellophane, aluminum foil, mylar film, glassine and tissue papers. Initial tests indicate a speed range of up to 800 f.p.m.

Weyerhaeuser Offers New Silver-Coated Boxboard

A new economical grade of boxboard designed to mask oils and stains, which penetrate the outer surface of a package from within, is announced by the Weyerhaeuser Co. The new silver-coated board employs aluminum pigment, to provide a smooth, satin exterior finish.

The product also offers excellent printing characteristics, according to Weyerhaeuser. It was found to have a high receptivity to all normal printing inks, reproducing both offset and letter press impressions equally well. The silver-toned board likewise evidenced excellent results with high gloss inks.

Of importance to boxmakers and packagers, is the bending quality of the new pigmented board. The metallic coated product displays the same high degree of scoring ease as that of commonly used board.

Many potential applications of silver-coated board are seen in the area of low cost gift packaging, and in the packaging of oily or greasy products where some loss of oils does not affect their marketability.

O-M Packaging Division Starts Up St. Louis Plant

Start-up of operations at the new corrugated container plant of the Packaging Division of Olin Mathieson Chemical Corp. in St. Louis has been announced by Kent Anderson, product manager, containers.

The manufacturing facility is housed in a new one-story building. A. L. Pressel, former sales manager of the division's Cincinnati container plant, has been appointed plant manager.

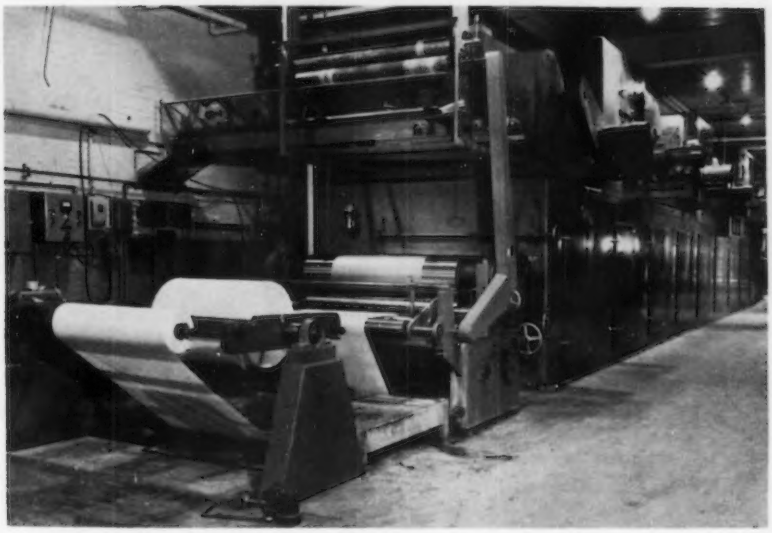
This new plant is a part of the Packaging Division program for improving customer service by establishing manufacturing facilities in growth areas.

The 38,000 square foot plant has a production capacity of 25,000,000 square feet of corrugated containers a year. The plant has a fully equipped container design laboratory. Shipments from the new plant are handled through a four-car rail siding on the Missouri-Pacific and three truck wells.

During the past year and a half, the Packaging Division has opened container plants in Dallas; Owosso, Mich.; Cincinnati; Joliet, Ill.; and Kansas City, Kans.

The St. Louis plant's equipment will include the following: one 50-inch by 103-inch two-color printer-slotter, two semi-automatic tappers, two semi-automatic stitchers, and an eccentric slotter and a 96-inch six-bar slitter. A 38-inch by 78-inch one-color printer will be installed at a later date.

NEW EQUIPMENT & SUPPLIES



Coating Dryer Claims Speeds 3 to 4 Times Faster

A high velocity coating dryer, which speeds production and reduces cleaning and maintenance costs, has been introduced by Frank W. Egan & Co. of Somerville, N. J.

Principal feature of the unit is use of spring-loaded discharge nozzles (patents pending) which permit quick changing for cleaning. The special design also permits all air delivered to the top and bottom of the web to be precisely controlled and evenly balanced. The nozzle design is said to also eliminate the side flow of spent air and insures equal drying across the web.

The dryer consists of three 20-foot zones, each supplied with its own air heating and circulating system, including supply fan, steam coils and fresh air supply, and recirculation and exhaust ductwork.

A turret unroll, two-roll treater with pre-wet roll, guide, water cooled pull roll unit, traveling shear and electric drive can also be supplied. Initial tests have produced speeds of three to four times those possible with a conventional dryer of equal length.

Envelopes Remain Flat With Solvent-Based Adhesive

A solvent-based adhesive, "Flash Seal," is said to require no plasticizer or "flattener," dries without heat almost instantaneously, and remains flat in storage without deterioration. Developed and introduced by Stein, Hall & Co., Inc., 285 Madison Ave., N. Y., Flash Seal is made from an uncooked dextrine that has been specially ground to a fine consistency; a synthetic resin polymer binder and an organic solvent, ethyl acetate.

The solvent evaporates without wetting and heat-drying the paper. This means faster drying regardless of atmospheric conditions and that "Flash Seal" will run as fast as present day envelope machines can operate and considerably beyond these speeds. Consequently, faster machines and machines with shorter drying chains may be possible. With the elimination of gas flames, heat lamps, infra red apparatus and other heaters, production can be carried on in air-conditioned plants. Despite the increased speeds, no "Flash Seal" envelope ever changes shape, claims Stein, Hall. Twisting, curling and tabbing are completely eliminated. If the envelope machine is stopped, for whatever reason, no envelopes are spoiled.

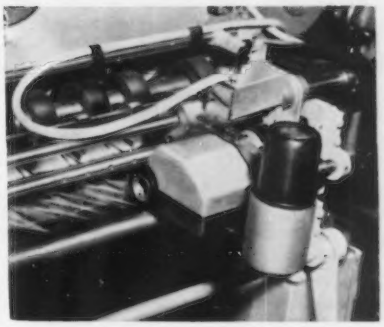
Flash Seal uses a somewhat thinner application than conventional adhesives requiring, on an average run, just 2¾ liquid ounces for 1,000 #6¾ envelopes. "Flash Seal" runs clean in the machine and after leaving the machine, envelopes are handled and packed in the normal way.

Economics in space are also reported. Because these envelopes remain absolutely flat, it is not necessary to allow extra space for curling when the envelopes are packaged. For example, flat-stacking qualities can mean reduction of an inch or more in a 500-piece box. In 200 boxes, this means a space saving of 15 or 16 feet.

Automatically Prints On Plastic Paper Wrappers

Marking of packages of stationery with sheet counts and description of contents, is accomplished with the aid of non-attended automatic printers manufactured by Bell-Mark Corp., Newark, N. J. Attached to the wrapping machines, the Bell-Mark model 6100 units register their imprints upon cellophane or polyethylene overwraps.

Printers replace paper bands



which carried the required message. Packaging of reams is now scheduled so that continuous runs of one or more day's duration are carried out before message changeovers are required. Changeovers are accomplished within minutes, requiring only that a new printing cylinder with the correct message be substituted for the one previously used.

Use of special inks assures a sharp, permanent imprint on cellophane, poly or other plastic wraps. The printer has an auxiliary reservoir which maintains a continuous supply of ink from a bottle. Thus, the printing unit may operate for a

full eight hour shift without supervision, requiring only that the ink bottle be replaced when its supply is exhausted. The printer, with friction drive, gets its power from the wrapping machine. Bell-Mark Corp., 18 Ropes Place, Newark 7, N. J.

Measures Amount of Curl in Paper

Testing Machines, Inc., announces the development of the TMI Curl Tester for determining the amount of curl which occurs in paper when the relative humidity is changed. A typical application is the gummed paper industry where paper with remoistenable type gum is used.

In making the curl test, a paper sample is conditioned to 50 per cent relative humidity for 15 minutes or longer. The amount of curl is recorded (away from gummed side is positive and toward gummed side is negative.) Next the sample is placed at 20 per cent R.H. for the same amount of time and the amount of cur is recorded.

The difference represents how well the paper has been broken (gum surface cracked to allow the paper to lie flat under most conditions).

Although this procedure only describes one application the curl tester has many different applications but the basic mechanics, however, remain the same. For complete details write to Testing Machines, Inc., 72 Jericho Turnpike, Mineola, N. Y.

Titanium Dioxide Pigment In Anatase Form

Development and commercial production of a new grade of anatase titanium dioxide designed especially for the paper industry has been announced by the Pigments and Color Department of The Glidden Company's Chemicals Division, Baltimore 26, Md.

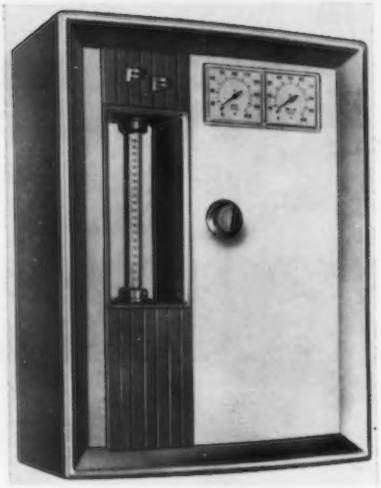
Known as Zopaque LD-C, the pigment is said to combine the better brightness, color and hiding power of the anatase form of titanium dioxide with unusual ease of dispersion and low viscosity characteristics of the rutile form.

The Glidden pigment is equally suited for on-and-off machine, size press, and calender coating operations and is compatible with all other common paper coating pigments and the adhesives used to bind them. As the pigment is priced as an anatase grade its use in paper coatings can in many instances bring about sizeable economies in coating formulation, it is reported.

Chlorinator for Industrial Water Treatment Plants

A wall-mounted chlorinator, 3600 series, has been developed by the Fischer & Porter Co., Warminster, Pa., for use in industrial water and waste treatment facilities.

The feature of the 3600 Series Chlorinator is the Safety Stack regulator within which all control components are housed. This simplified design concept is said to reduce frail piping and connections which are potential sources of leaks. Other features of the Safety Stack design are: a shut-off valve, sealing the chlorine supply from the chlorinator during inoperative periods; an isolating valve, which seals tight the functional parts of the Safety Stack and prevents even traces of water from entering the chlorinator due to ejector back pressure; and a differential pressure regulator to maintain stable drift-free chlorine gas feed despite wide variations in chlorine gas pressure, water supply pressure, or pressure at the point of application.



This manually-operated chlorinator is reported to maintain an accuracy of ±2 per cent of feed rate over a 20-to-1 range in flow. A simple snap-in flowmeter tube allows capacity changes from 3 to 200 pounds of chlorine gas per day, without the use of tools.

For protection against corrosion, the 3600 Series Chlorinator is housed in a rigid Fiberglas cabinet. A two-tone beige color is an integral part of the cabinet, completely eliminating painting or other maintenance. The total weight is 65 pounds.

The 3600 Series Wall Mounted Chlorinator compliments the line of floor mounted models, the 3400 Series Chlorinators, which have a capacity range of 3 to 2000 pounds of chlorine gas per day, and which can be manually or automatically operated. For more information write Fischer & Porter Co., 670 Jacksonville, Road, Warminster, Pa.

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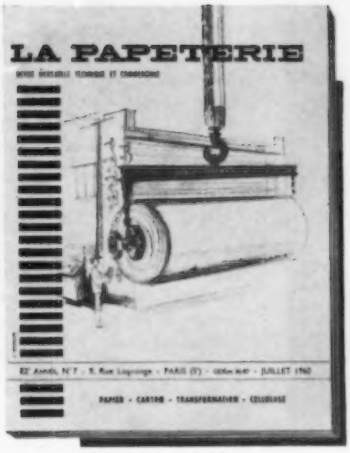

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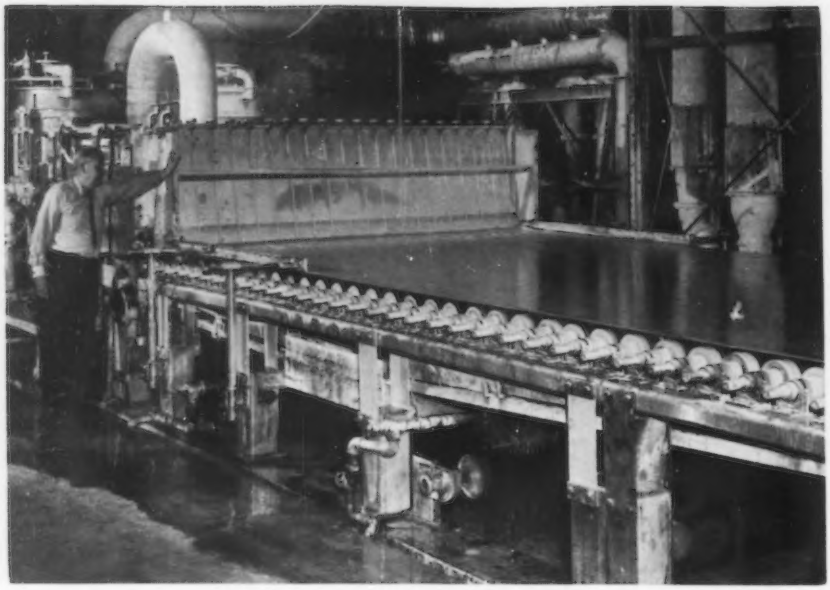


Thomas Palmer, general manager, watches the performance of his new Sandy Hill fourdrinier.

J & J Rogers Co. Rebuilds Two Machines and Expands

Modernization of equipment and switch in grades results in rehabilitation of this fifty-seven year old upper New York State mill.

Today, a little more than two years after changing the mill's product to a high grade line of card, tag and offset papers, the J. and J. Rogers mill at Ausable Forks, N. Y., is operating on a six day a week schedule, tonnage has been more than tripled, and order backlogs are forcing a continuing emphasis on further increasing production. High quality appears to be the secret that is keeping the new product line in consistent high demand.

Such is the report coming from this 100 ton a day mill in the upper Adirondacks, following completion of another phase in the mill's program of machine rebuilding and plant modernization.

In November of 1955 the J. and J. Rogers mill was sold to outside financial interests after being a closed family corporation since its beginning back in 1903. Since 1957 the mill has been under the management of Thomas Palmer, who has had wide experience in many fields of paper making and marketing, especially in the field of card, tag and offset papers.

Cylinder to Fourdrinier

The program began with the conversion of No. 1, a cylinder machine, to a fourdrinier machine. The machine's seven vats were taken out and replaced by a rebuilt fourdrinier. A unique headbox and slice arrangement allows for producing a range of papers with basis weights from 30 pounds to 175 pounds. According to Mr. Palmer the secret for producing so wide a range of weights rests in the double jackknife or scissor slice and in the recirculation features of the headbox. The slice is likewise given credit for a great improvement in formation and appearance on the high grade heavy weight papers.

Production ranges from offset papers through index, bristol, postcard and tag stocks in white or in any one of ten different colors. Adjustable side plates allow for deckling in to vary the width of the sheet.

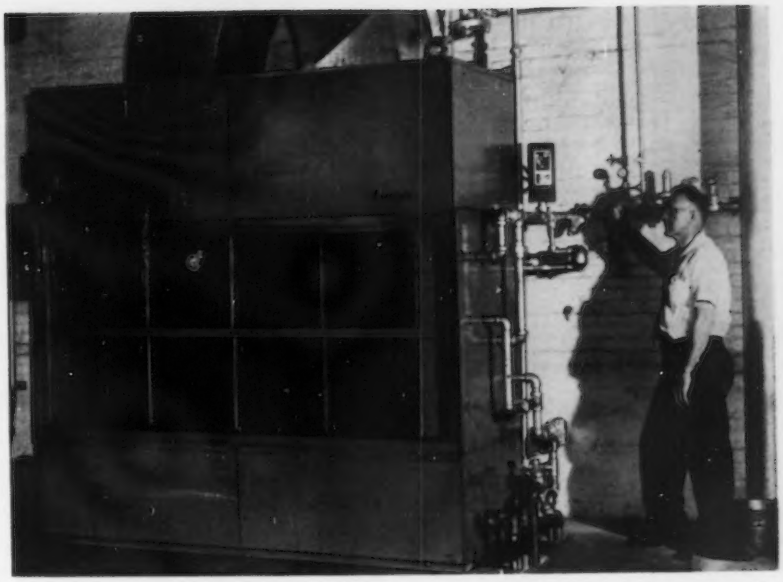
Rebuilding Another Machine

With No. 1 machine in operation on the new line of products attention was turned to No. 2, a fourdrinier machine. In April, 1960, the backlog of orders was so pressing that it was decided to embark on a crash program to raise quality and production on No. 2 machine. Sandy Hill was given a contract to produce a New Ideal fourdrinier, a standard type fourdrinier section comprised of standardized elements. Immediate attention was given to the dryer stack in preparation for meeting stricter code regulations in anticipation of higher machine speeds when the new wet end would be completed. Sandy Hill cast 40 new dryer heads and installed them in the existing Pusey and Jones dryers on the machine. These heads were installed during weekend and holiday shutdown periods and in three or four instances Sandy Hill met emergencies to keep the machine running by providing dryer heads and gears within a 24-hour period.

In mid-August the new fourdrinier was ready, and on Monday night, August 22, No. 2 paper machine was shut down for the change-over. A remarkably well-coordinated timing schedule resulted in every phase of dismantling, machine room preparation and machine installation proceeding on what appeared to be nearly split-second timing with little or no lost motion or overlapping of effort. Machine designing had been so carefully fitted to existing mill conditions and requirements that when the signal for start-up was given just one week later on Monday morning, August 29, this was accomplished without incident and the first reel off the machine was of salable paper.

At start-up the machine speed was increased 50 feet per minute and is still being raised. Previously the machine speed had averaged 350 f.p.m. According to Manager Palmer, speed will be gradually increased up to design speed of 750 f.p.m. determined by the mill's manpower ability to adjust to handling the increased tonnage. At the next wire change it is planned to increase the wire width from 126 inches to 129 inches. This width increase is made possible by the wider table rolls on the new fourdrinier. This change will permit a further increase in machine tonnage.

The new fourdrinier incorporates several improved design features, including a new table roll bearing design and a wire stretch arrangement designed to comply with the existing suction box area. No. 2 machine produces bond, offset and envelope papers, either plain, watermarked or embossed, at basis weights ranging from 36 to 70 pounds.



John Richards, superintendent of the finishing department, stands besides the mill's new air conditioning unit.

All the new equipment for the two machines was purchased from and installed under the supervision of Sandy Hill Iron & Brass Works.

Other Improvements

In conjunction with the general mill improvement program the management has built and air conditioned a new finishing room. This new finishing department, with its controlled humidity, will provide the modern press rooms with paper properly conditioned to suit the requirements of today's high speed printing presses.

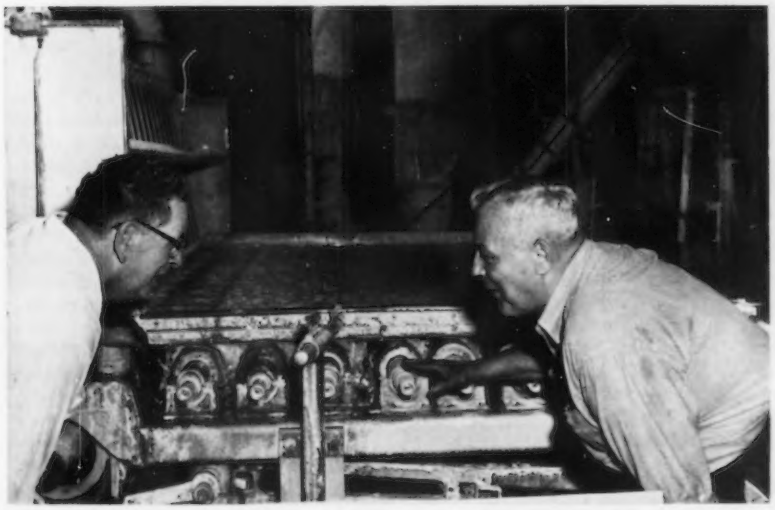
Next step in the modernization program will be the installation of a modern high speed 130-inch sheeter in the finishing department.

In commenting on the mill's average daily tonnage ranging between 100 and 110 tons per day, Manager Palmer predicted a permanent and very definite future for paper mills geared to manufacture specialty grades in small amounts. Thus he points to the need for high quality and fast deliveries from the so-called small output mills. He anticipates a continuing program in further upgrading of quality and output.

Personnel Responsible

In enumerating phases of the program carried out during the past two years Mr. Palmer was anxious that due and proper credit be given to the engineering program carried out jointly, under his direction, by Frank R. Markwith, then of his own staff and now associated with the Pioneer Division of Flintkote Co. in Los Angeles, and Harold F. Greeney, engineer for The Sandy Hill Iron and Brass Works.

Credit is likewise reflected to E. Henry, superintendent, who joined the staff in August, 1958, with a background of 42 years' experience, mostly in West Coast paper mills; and to Maurice Votraw, veteran master mechanic with 46 years in the J. and J. Rogers organization, and to many others, both at Ausable Forks and at Sandy Hill, through whose coordinated cooperation the program was brought to a successful completion.



Maurice Votraw, master mechanic, on the right, and Ted Henry, superintendent, discuss the performance of their new type table roll bearings.

Process Instrumentation For Continuous Refining

R. F. Barber,
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Process instrumentation for continuous refining as covered here concerns the measurement and automatic control of the fundamental variables such as flow, temperature, level, pressure, and load. Admittedly, these variables are only inferential guides and aids to the papermaker in preparing stock for the machine. If the paper specifications to be met, such as strength, could be measured directly on a continuous basis, then these could be used for automatic control of refiners. Nevertheless, the instrumentation offered today by the major process instrument companies to measure and control the fundamental variables does give a high degree of reliability and accuracy.

Magnetic Flow Meter

Probably one of the most widely known and accepted items of instrumentation in stock refining is the magnetic type flow meter. Since this meter was introduced in 1955, a considerable number have been applied to the measurement and control of volume flow rate through refiners and jordans.

Briefly, the magnetic meter is an unrestricted length of pipe inserted directly in the flow line. Around the meter flow tube are electric coils energized with conventional 50- or 60-cycle power to produce a magnetic field uniform throughout the cross section of the pipe. As the stock passes two electrodes, mounted 180 degrees apart and flush with the inside of the pipe, an a-c millivoltage is generated which is both linear and proportional to the average velocity of the flowing stock. This generated millivoltage is a function of field strength, distance between the electrodes, and average velocity. Therefore, it is unaffected by such stock changes as consistency, temperature, pressure, and conductivity. Figure 1 illustrates a multiple installation of magnetic meters on disk refiners in a southern mill. Here the meters not only record continuous stock flow through each refiner, but also assist the operators in balancing out the total stock to the refiners so that each one carries its equivalent share of the refining load.

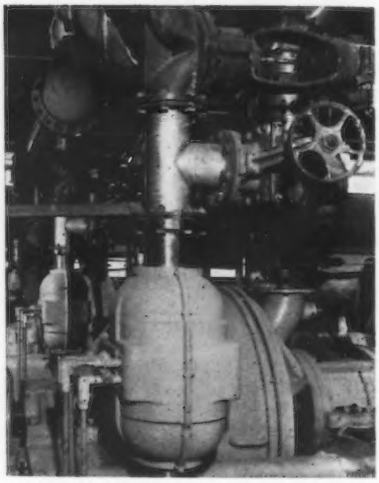


FIGURE 1. Multiple installation of magnetic flow transmitters vertically mounted beside Bauer refiners.

Semi-Graphic Control

Figure 2 shows a very attractive and highly functional semigraphic type control center for a prerefining operation in a large New England mill. In this operation, two magnetic flow meter controllers are used for the prerefining of two different stocks. The left side illustrates purchased stock being pulped under automatic batching control and dropped to the supply chest. Next, the stock is processed through refiners at a controlled flow rate using a magnetic meter controller and valve, then delivered to the refined stock chest. Stock flow is indicated by a small direct-reading gauge, while the controller itself is located under the clock. Similarly, the hardwood kraft pulp enters a supply chest shown in the lower center of the graphic. The pulp is pumped through its respective refiners and automatic flow control system to the refined hardwood stock chest. Associated with this prerefining control center are consistency controllers, level recorders and controllers, complete with the necessary push buttons for pumps, agitators, and other control devices. This type of semi-graphic portrayal in a prerefining system, with the conventional recorder-controllers mounted on each side, has proven very effective in the paper industry.

Temperature Difference

This particular installation also includes the highly successful application of temperature difference across each individual hardwood refiner. The temperature difference serves as an operational guide in dividing the flow rate evenly. Of special importance is the proper prerefining of the hardwood pulp to develop all the strength possible so that the usage of purchased long fiber pulp can be kept to a minimum. Therefore, the plug settings and stock valves for each refiner are adjusted until the indicating wattmeters and temperature difference readings are the same. At this point, the flows through all refiners are about the same and the system is balanced. The temperature rise and power readings can also be used to determine the work done on the stock.

In recent years, papers have been delivered which outline exploratory work done to see if a correlation exists between temperature rise across a refiner and the corresponding drop in freeness. Since the reliability and sensitivity of tempera-

ture difference instrumentation is very high, such a correlation could possibly lead to the use of temperature difference as a form of control, either for plug setting at constant throughput or for throughput control at constant power input. Results indicated such an approach would be feasible under certain controlled conditions of constant furnish make-up and constant consistency. However, whether or not this approach would be feasible for a particular mill would depend upon correlation studies made by the mill on its particular jordans or refiners. Without establishing such a correlation, there can be no assurance that a temperature difference control system would be worth the investment. Certainly, the instrumentation available is accurate and reliable in its own right, but the success of its potential application can only be determined by the mill technical department.

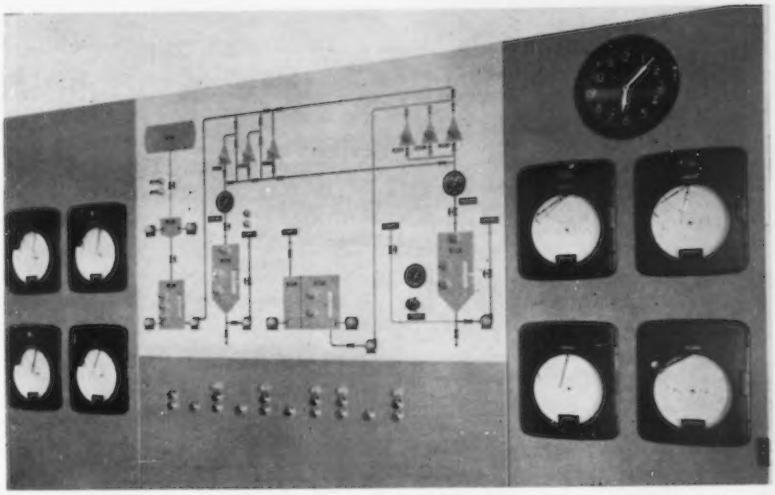


FIGURE 2. Semi-graphic control center on preliminary refining operation in a large New England mill.

Continuous Refining and Blending

Figure 3 covers the simplified flow sheet of a major Midwest paper mill which has recently converted to completely continuous stock refining and blending. Bleached hardwood and pine pulps are now prerefined separately, so that the individual properties of each stock are fully developed. Throughput is maintained at a constant rate by a magnetic flow meter system. Each refiner is equipped with temperature bulbs on inlet and out-

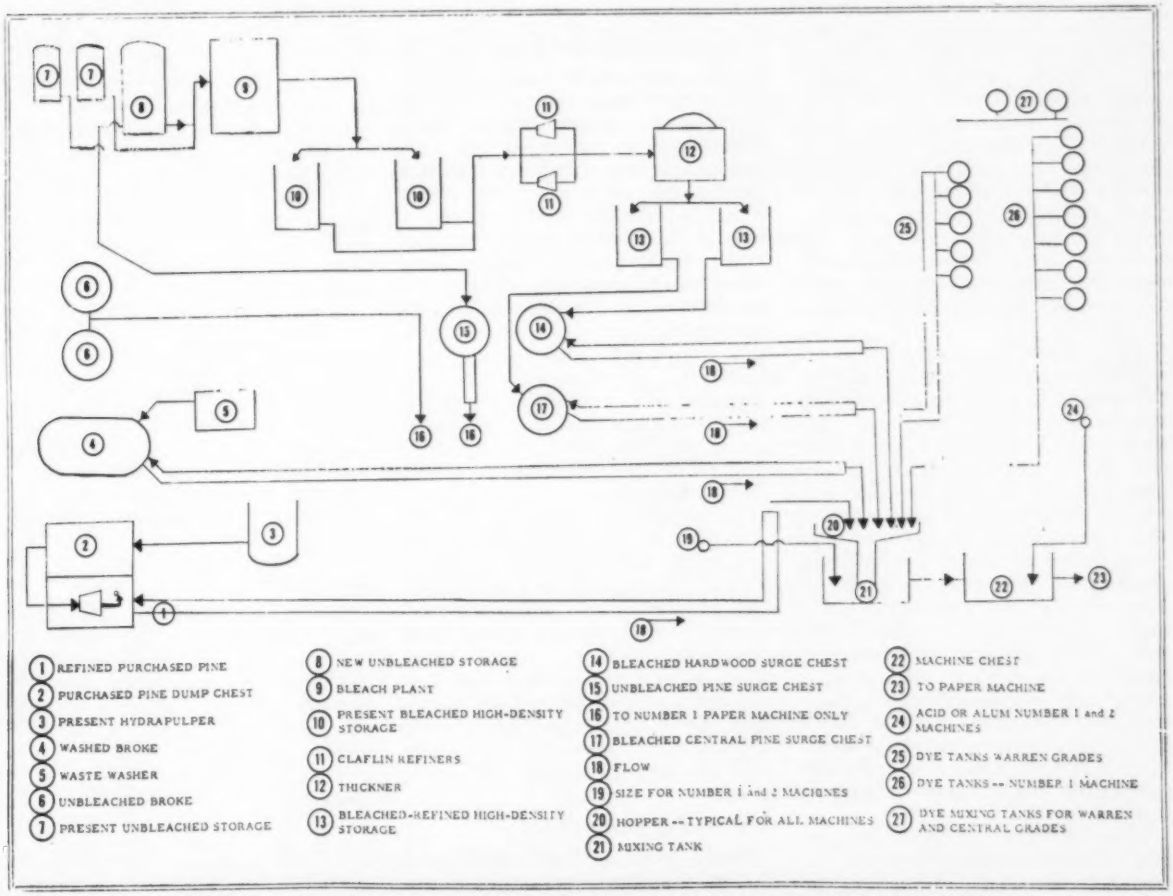

1 REFINED PURCHASED PINE
2 PURCHASED PINE DUMP CHEST
3 PRESENT HYDRAPULPER
4 WASHED BROKE
5 WASTE WASHER
6 UNBLEACHED BROKE
7 PRESENT UNBLEACHED STORAGE
8 NEW UNBLEACHED STORAGE
9 BLEACH PLANT
10 PRESENT BLEACHED HIGH-DENSITY STORAGE
11 CLAFLIN REFINERS
12 THICKNER
13 BLEACHED-REFINED HIGH-DENSITY STORAGE
14 BLEACHED HARDWOOD SURGE CHEST
15 UNBLEACHED PINE SURGE CHEST
16 TO NUMBER 1 PAPER MACHINE ONLY
17 BLEACHED CENTRAL PINE SURGE CHEST
18 FLOW
19 SIZE FOR NUMBER 1 and 2 MACHINES
20 HOPPER -- TYPICAL FOR ALL MACHINES
21 MIXING TANK
22 MACHINE CHEST
23 TO PAPER MACHINE
24 ACID OR ALUM NUMBER 1 and 2 MACHINES
25 DYE TANKS WARREN GRADES
26 DYE TANKS -- NUMBER 1 MACHINE
27 DYE MIXING TANKS FOR WARREN AND CENTRAL GRADES

FIGURE 3. FLOW CHART FOR A NEW REFINING AND STOCK AND DYE METERING SYSTEM.

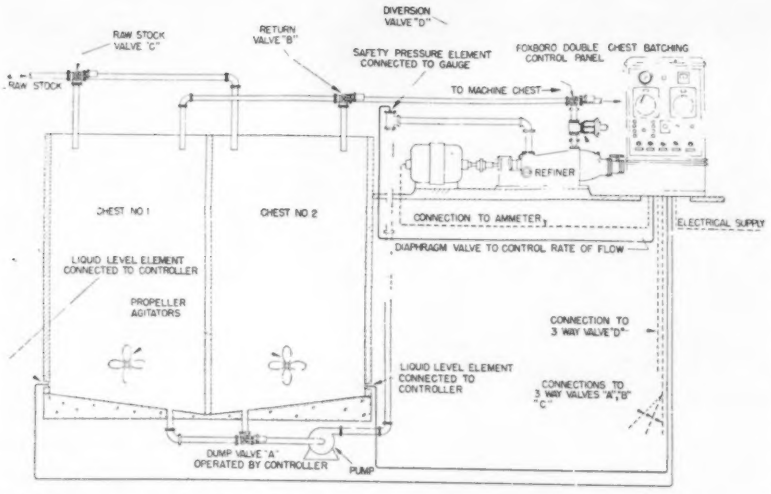

DIVERSION VALVE "D"
RAW STOCK VALVE "C"
RETURN VALVE "B"
SAFETY PRESSURE ELEMENT CONNECTED TO GAUGE
FOXBORO DOUBLE CHEST BATCHING CONTROL PANEL
RAW STOCK
TO MACHINE CHEST
REFINER
CHEST NO 1
CHEST NO 2
CONNECTION TO AMMETER
ELECTRICAL SUPPLY
DIAPHRAGM VALVE TO CONTROL RATE OF FLOW
LIQUID LEVEL ELEMENT CONNECTED TO CONTROLLER
PROPELLER AGITATORS
CONNECTION TO 3 WAY VALVE "D"
LIQUID LEVEL ELEMENT CONNECTED TO CONTROLLER
CONNECTIONS TO 3 WAY VALVES "A","B" "C"
DUMP VALVE "A" OPERATED BY CONTROLLER
PUMP

FIGURE 4. Layout of a double chest batching system suitable for smaller mills.

let. The temperature differences are recorded and serve as a guide to divide the load. The motors are equipped with strip chart recording wattmeters to facilitate manual plug positioning and give a record of power input.

The refined pine and hardwood stocks are delivered to surge chests which serve circulating headers operating under constant automatic pressure control. Purchased pine pulp is slushed, then refined by a single pass to a storage chest. This chest, in turn, also supplies a circulating header. This particular refiner is also under constant flow control based on magnetic meter measurements. The technical department provides the operation with the flow and power settings to obtain the desired degree of refining.

Pulp stocks are delivered to the mixing tank for each machine from the respective circulating headers by magnetic meter proportioning controllers. At the same time, additives and dyes are delivered by similar proportioning controllers. The furnish is then passed to the machine chest through a single refiner which gives further action on the combined stocks. The throughput is regulated by a control valve responding to the machine chest level controller. This demand rate to the machine chest is sensed by the mixing tank level controller which automatically adjusts the total rate of the stocks, additives and dyes at their desired proportions. Therefore, this total rate to the mixing tank is exactly equal to machine demand.

From the machine chest, the furnish is given additional refining before arriving at the head box. Refiner settings are manually adjusted to give the desired degree of final treatment, depending upon the grade being made. On three of the paper machines, the furnish rate is regulated by manual valve setting; on a fourth machine, it is automatically regulated by a magnetic flow controller.

New Installation at Southern Mill

The most recent installation of control for continuous refining and blending for a new machine in a large southern mill uses a complete graphic portrayal of the preparation system for stock as it leaves the bleached storage chest and is delivered to the machine chest. (This mill preferred the compact strip chart receiver-controller which was designed to be fully compatible with the complete graphic scheme.) Here, the consistency controllers deliver the stock to three prerefiners. In this magnetic meter flow proportioning installation, the desired percentages are set on direct-reading dials located just above the individual recording control stations.

The combined stock leaves the mixed stock chest and passes through two more refiners, each equipped with magnetic meter flow controllers. The ranges of the controllers are selected so that, as the machine chest level controller dictates total mixed stock rate into the chest, the flow through each refiner is exactly one-half the total. Again, the graphic area includes the necessary push buttons for remote operation of the refiners.

Wet-End Control Panel

There is a wet-end control panel for the same machine which shows how the stock passes from the machine chest through a pair of refiners prior to entering the stuff box. Located above the refiner symbols are load recorders and the automatic-manual push-button stations for automatic plug control of each refiner. This installation has the facilities to permit the couch vacuum controller to set automatically each refiner plug, based upon changes in couch vacuum due to freeness variations.

Of particular interest are the systems offered by leading stock preparation equipment suppliers, whereby the quality of batch refining can be obtained using continuous refiners. Figure 4 illustrates the layout of a double chest batching system suited for low tonnage mills where high energy input to the stock is necessary to meet increased machine speeds and yet refine the stock to its maximum potential. In operation, stock passes from chest No. 1 through the refiner to chest No. 2. When chest No. 1 reaches a low level, the necessary valves are automatically reversed, and the stock passes from chest No. 2 back through the refiner to chest No. 1. After the desired number of passes are made—as previously set on a time — the stock passes through the refiner for the last time and enters the machine chest. At the same time, raw stock is admitted to whichever chest is empty.

During the batch refining operation, automatic plug control, based on motor load, positions the plug to insure that the same amount of refining is done on the stock during each pass. The results include: (1) uniform treatment of the stock for successive batches and (2) very low operating costs per ton. Figure 4 also shows a sketch of the control panel which features recording level controllers equipped with the necessary electrical devices for automatic pass switching and chest filling. The pass counter, stock line pressure shutdown interlock, push buttons and indicating lights complete the control system.

Conclusion

Continuous refining will receive its share of attention by the process instrumentation companies as future techniques of measurement and control are developed. A large measure of a mill's success in meeting ever tighter specifications, obtaining lower production costs and selling in a competitive market depends on the ability to prepare the machine furnish with minimum variations.

Based on a paper presented at the Maine-New Hampshire TAPPI Meeting held on June 17, 1960.

A Letter to the Editor on

Bruderhaus Off-Machine Horizontal Size Press Article

DEAR MR. EVANS:

I read the article in PAPER TRADE JOURNAL, Sept. 19, 1960, on the Bruderhaus off-machine horizontal size press with great interest. We have, as you know, pioneered the horizontal size press in the U. S. and are vitally interested in any new and/or different approach to it. This Bruderhaus equipment is an excellent example of how European designs often differ widely from those in this country but also how they can complement each other to mutual advantage in many fields in our industry.

There are three main points in the article on which we would like to comment: (1) the very interesting thought of creating an off-the-machine size press in the first place, (2) the relative complexity of the design (by our standards here) and (3) the difference of opinion that seems to exist about the depth of the pond desirable in the horizontal size press.

Off-Machine Idea Unusual

We are (as you would probably expect) pleased that an off-the-machine horizontal size press has been designed. This is an interesting thought, and one that we have been pursuing for some time. As a result, we will watch with considerable interest the experiences reported on this equipment. One would have expected off-machine sizing to have developed first in the United States rather than in Europe because the majority of the paper machines here are used for long, unvarying runs, while in other countries they are primarily specialty machines making a wide variety of grades with shorter runs and therefore where versatility of design is of great importance. It seems to us that the use of a size press off the machine is a step in the other direction, which shows that European paper mills are beginning to think of long, uninterrupted runs. One would think that here in the U. S. a lot of mills which run basic grades ninety per cent of the time would like the idea of having a size press off the machine which makes it possible to run continuously on one long order and then take a certain small portion of that production and surface treat it. This so far has not been the case here but we think it will come.

We are also happy to see this off-machine development because it stresses the place of the size press as a piece of coating equipment. The size press has of course been developed more and more into a coating unit in recent years.

Comments on Design

I should like to comment on design of this equipment. By standards here, the Bruderhaus size press as described seems overly complicated. I refer to all the automatic circuits they have included, etc. These appear to us to be rather unnecessary, merely for "managing the press" when a break occurs. In the final analysis these can only invite maintenance difficulties, not to speak of higher costs, especially higher initial investment. We can see no reason for the necessity (or desirability) of opening the nip of a horizontal size press each time a break occurs. (At least, we can see no point in doing so with our design). It is of course possible that the complexity of the sheet run in this European design necessitates doing so. We do of course readily see the necessity of opening the nip when the paper wraps around a roll as the result of a break, but the Bruderhaus design appears to make provision for opening the nip under all circumstances. Finally, we see no advantage in saving the small amount of size that remains in the nip when a break does occur. To us, it seems desirable to sewer this small amount (in U. S. designs) because doing so helps prevent foreign material from getting into the size.

Pond Depth

The final point on which I would like to comment is pond depth. The depth of the pond carried in a horizontal size press has long been a subject of much interesting discussion in this country. The European approach as described, advocates carrying a pond much deeper than commonly practiced with horizontal presses here. We feel that with certain grades it is entirely possible to gain advantages from running with a deeper pond but this would seem to be true primarily for letterpress grades which are not often surface sized in the U. S. For offset sheets it has been proven frequently in this country that "soaking" the sheet in a deep pond is unnecessary and that so running gives results really no better than the common practice here of running with a relatively shallow pond.

You are to be complimented for presenting this interesting and informative article about the Bruderhaus off-machine size press, which adds much to the general knowledge on this subject.

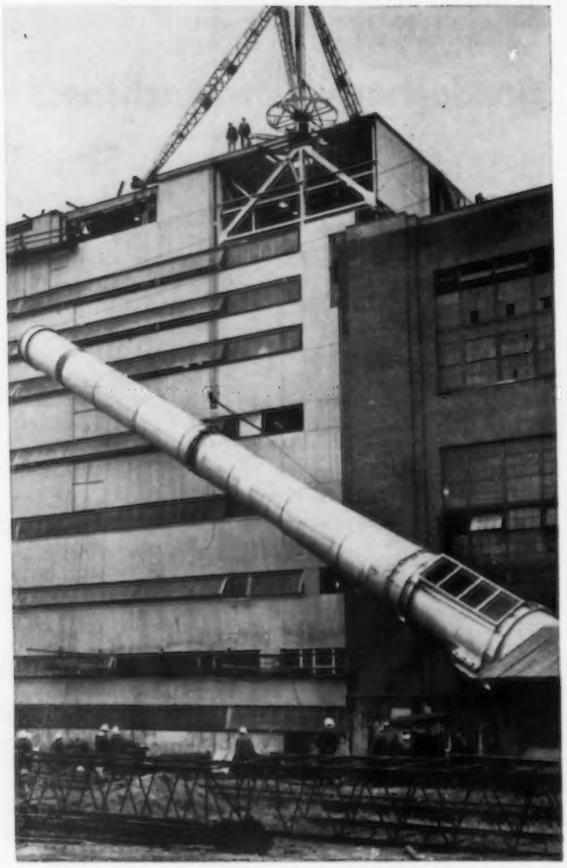
Wayne T. Crannell

General Manager
Paper Mill Machinery Div.
Patton Manufacturing Co., Inc.

"Wow! I'll never take a shortcut through there again."

28-Ton Metal Stack 125 Feet High Creates Unusual Erection Problem

P. W. Davis,
Project Engineer,
The Rust Engineering Co.,
Pittsburgh, Pa.



28-ton stack is raised from the ground. Note additional cross-bracing, added to building corner to carry stack load.

Designed on an electronic computer this recovery furnace stack was located on the roof of an existing steam plant building.

Included in the current modernization and expansion program conducted by the Oxford Paper Co., Rumford, Me., is a new 300-ton capacity recovery boiler unit. The new plant was attached to the west side of the existing recovery boiler room and to the north side of the steam plant. The layout of the proposed recovery unit called for the stack to be placed on the south end of the unit. Examination of the existing power boiler building proved that the bay adjacent to the new building was strong enough structurally to carry the new stack with only minor additions of steel beams and concrete to serve as the actual base of the stack.

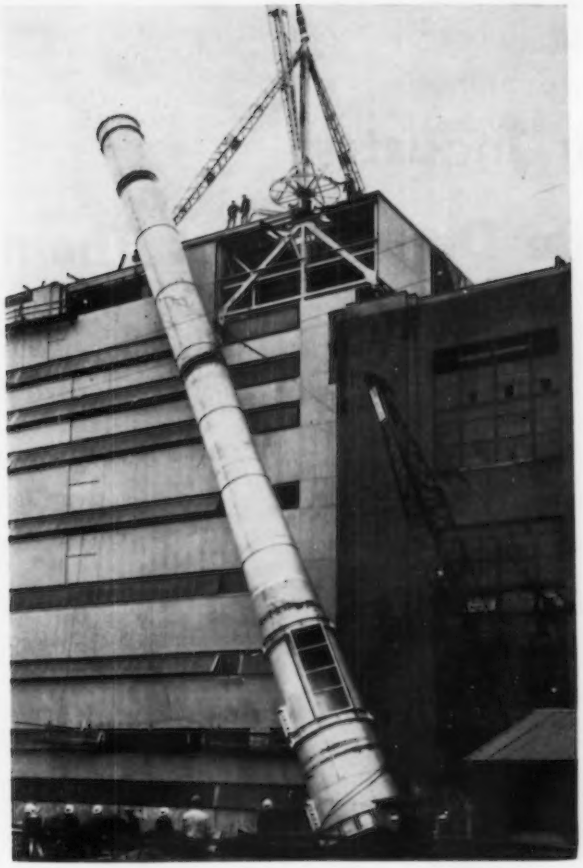
This meant that the base of the new stack, resting on the roof of the present steam power boiler building, would be approximately 85 feet above the surrounding terrain. A height of 125 feet was chosen for the actual stack for dispersion reasons. This stack height therefore placed the top of the stack slightly over 200 feet above the adjoining ground level.

An extensive study was made on the type of materials to be used in the new stack to resist the corrosive elements of the flue gases and the possible corrosive precipitation. After investigation, it was decided to construct the stack of 316 ELC, 20 per cent stainless clad steel, with the top 10 feet to be made of solid 316 ELC stainless steel. The solid stainless steel portion was used at the top to protect the outside surface against possible down-draft corrosive effects. It was further decided that the stack should be insulated to reduce dew point condensation within the stack. Two-inch thick fiber glass bats were chosen for the insulation because of the relative and anticipated flexibility of the stack.

Structural Design by Computer

Actual structural design of the stack was done by the Pittsburgh engineering office of Rust on an electronic computer. The machine was given a program containing the following data and fixed requirements: wind pressure 25 lb. per sq. ft., minimum plate thickness of ¼ inch, allowable steel stress, stack height, stack diameters, length of cylindrical section and length of conical base section.

Based on this program, the moment, shear and plate thickness at 503 foot intervals were computed, as were the answers for the following design details: Bracket size, including top and bottom plates; Stiffener plates; Stiffener plate spacing; Anchor bolt size; Number of bolts required; Maximum deflection; Criti-



125 foot stack reaching almost vertical position with bottom supported by the traveling crane.

Stack in highest position ready to be swung to the right onto its roof base by Rust Engineering riggers.

cal wind velocity for harmonic vibration; Individual component weights; Total weight; and Location of center of gravity.

Using the same machine, the stack design was then checked for earthquake stresses based on 10 per cent gravity, the controlling earthquake requirement for the locality. The design check proved the earthquake requirement to be less than the wind and weight design.

Change in Plans

In the early stages of the design of this building and stack, it was anticipated that the stack would be fabricated and erected before the building structural steel was erected. However, the steel strike in the fall of 1959 delayed delivery of the materials required for the stack fabrication but it did not interfere with the delivery of the structural steel for building framework. Inasmuch as an unpredictable delay would then occur in the stack delivery, it was decided to proceed with the erection of the building framework.

Therefore, a change in plans for the erection of the stack became necessary and it was decided to erect the stack in one piece using a stiff leg derrick mounted on the roof framing of the new building. Upon adoption of this scheme, it was necessary to reinforce the building columns and put additional cross bracing in the southwest corner of the new building to carry the anticipated erection loads. This reinforcing, with the exception of the temporary baseplates for the hoist support, remained in position as part of the building.

Delivered in Two Pieces

The stack was delivered to the site of the job in two pieces and was welded together on the ground. Girdle cables were placed around the stack slightly above the calculated center of gravity against slip lugs which had been welded to the stack. The stack was raised by use of the stiff leg while the base of the stack was kept off the ground by use of a traveling crane until it hung free from the surface. The stack was raised in one operation, placed upon its base and bolted. The entire operation was performed in 47 minutes. The time for erection was chosen after learning the local weather bureau's prediction of little or no wind for some hours, even though heavy rain fell during the entire operation.

Raising Operation

The lifting of the stack was accomplished by a 30-ton capacity stiff leg derrick with 35-foot long lay beams and an 80-foot boom. A nine part $\frac{3}{4}$-inch diameter line was used. The stiff leg was powered by a Model 140, three-drum special American hoisting engine, 145 h.p. capacity. The engine was equipped with manual brakes and an air controlled clutch. The engine had a single line pull of 260-feet per minute. The engine was located on the basement floor of the new building. Rotation was achieved by the use of a bull wheel and powered by auxiliary drum on the hoisting engine. The entire operation was carried out by the construction forces of The Rust Engineering Co.

Some Problems of Our Industry and What Should Be Done About Them

A frank and statesmenlike appraisal of our difficulties and faults with some concrete suggestions for improving our situation.

Howard E. Whitaker

The economic situation is today indeed, a puzzle. We started out the year with a fanfare of trumpets, the great 60's before us; and before we get half way through the first year, we find out something has gone haywire. Just what is wrong is hard to figure. The economists point out that our faithful charts are still holding up, the Federal Reserve Production Index has been practically level (at a new high level) for about eight or nine months. Consumer spending power in America is as high as it has ever been, Europe has recovered and is enjoying an unprecedented boom, and our own GNP (Gross National Product) has reached the new high level of 500 billions and over.

Our manufacturing industries in the United States have practically rebuilt their plants since the war and technological efficiencies have reached new heights. Productivity of labor when figured on man-hours per ton of product has steadily been increased. And more attention and dollars are being devoted to research than ever before. Still further technical achievements are just around the corner.

Yet people are beginning to say we have been in a depression and didn't know it. It's only when the stock market goes down that we find this out, it seems.

Some politicians blame our troubles on the relatively tight money situation a year ago, when interest rates were soaring. Well, money was tight, at a time when industry was expanding production capacity at a great rate. I just wonder how far this expansion of capacity might have gone, if money had not been tight and interest rates high. Certainly it looks as though the wave of expansion had been somewhat overdone; and conditions could have been even worse, if the brakes had not been applied.

Howard E. Whitaker, president, APPA and chairman of the board, Mead Corp., who was recently honored at a dinner meeting of the Salesmen's Association of the Paper Industry. This article is based on Mr. Whitaker's speech on that occasion.

Danger of Over-Expansion

Coming to the paper industry, at the combined meeting of the Writing Paper Manufacturers Ass'n. and the Printing Paper Ass'n. recently, it was pointed out there is a spread between available production capacity and the market demand of roughly 20 per cent in most lines of white paper. That is, the forecast of demand in the next year or two is unlikely to average at best more than 80 per cent of what the industry can produce on an all-out basis. Yet expansion still goes on. Each company has its own reasons for building to meet anticipated sales in the future, and no doubt most of them are fully justified. But the combined effect, in terms of cold figures and statistics, indicates future supply to be at least two years ahead of the probable growth of consumption; and in some lines, the paper industry is as much as three years ahead of realistic projections.

Frankly, I'm an optimist myself, and always have been about the growth of our paper industry. Therefore, I find it most difficult and out of character to throw cold water on the vigorous spirit and aggressiveness which has distinguished our industry. But, optimism itself is no saving grace. There can be too much of a good thing when it is carried to excess. That is the real question here. Are we not reaching a critical point where all of us must take a very sober look at our situation?

You are all aware of what the public thinks of paper companies and the value of their stocks as investments today. Just as with every industry, the shrewd investor is first of all interested in earning power. All the rest of it, whether it is holdings of timberlands, wide diversification of products, money spent for research and new products, it all comes down to one thing in the last analysis: future earning power. On balance, the public doesn't have a very high opinion of the earning power of paper companies today.

Now, I know that you as salesmen did not make the decision to expand production capacity on the scale of recent years. We, in top management, are the ones responsible. Although company by company, some of you may have given us some fairly rosy forecasts of future sales

volume. It isn't a question of placing blame on past performance. What counts now is what are we going to do about it this winter, and next year, and the year after that.

I have some ideas; and they are not particularly new or original either. But, it seems to me, if we run through a series of such ideas, discuss them with each other and improve them, we can all eventually influence the direction of things and build for a sounder industry for all of us.

Returns Must be Adequate

It does not make sense to invest capital moeny in a project, whether it is additional capacity or improved efficiency or anything else, unless the return can be measured and found adequate. And adequate means a higher return than you can get in government bonds or the savings bank. If you can't beat those levels, you had better let someone else invest the money for you.

"The combined effect indicates future supply to be at least two years ahead of the probable growth of consumption; and in some lines is as much as three years ahead of realistic projections."

"We have always made certain grades on certain machines; and expect to keep on pushing the tonnage whether or not it is in our best interest."

In a recent article, it was stated that the paper industry has, since 1954, invested $917,000,000 in new plant and facilities; and that at the end of this period of five years, the combined earnings of the industry had increased exactly 37 millions, or roughly four per cent on the overall additional investment. This is an average, of course, and many millions of this amount produced a higher return and many millions must have been spent with little or no return at all! If these figures are correct (and I have no reason to doubt them), it is not a very good record for the management of our paper mills.

True, there are doubtless many explanations involved to account for it: changing economic conditions, shifting competition between grades and uses of paper, all sorts of reasons. But, it is only the results that count with the stockholders who own these paper companies of ours. They would seem to have good reason to question the judgment of their management.

It would seem obvious that a fundamental principle in spending future millions must be that the returns must be adequate; and unless these facts are available and clear, the venture should be abandoned. A major mistake of this nature not only can hurt the company involved, it could hurt the industry.

We must learn more about our customers, our markets, and the changes that are taking place. It has been said that our customers are more important than our products. When you think it over, it is quite true. We can change our products to suit the needs of the customer, and we do change them all the time. But, how many of us act as though the product is more important than the customer: so many tons of a certain grade to sell; how much can we sell here and sell there. We forget that our real problem is to study our customer and his changing needs and to have the kind of product available that he wants and needs.

Watch Product Profitability

A third idea, which certainly is an old one, is that we should constantly study product profitability: the relative value of our various grades to the company in earning power. Promote the profit items and discard the low margin products. It is a perfectly obvious way of improving earnings, yet it seems to me that most of us are in a rut in this respect. We have always made certain grades on certain machines; and expect to keep on pushing the tonnage whether it is in our best interest to do so or not. I, myself, come from the production end of the business. My thinking was geared to efficient production of particular grades, and we changed the machines until we thought we had them just right. And how we resisted the salesmen who wanted to change the grade and run trials on grades which were not suited to our equipment. I used to think that salesmen should go out and sell what we made, not invent new things for us to make. It took me a good many years to find out that the customer didn't care particularly whether our machines ran or not. All he was interested in was the kind of paper he needed, and the people who would make it for him.

Profit Outlook

Most paper companies will report increased sales this year over last, but not much change in profits. And some will not even show increased sales. According to some of the economic forecasters, in 1961 there is some doubt whether overall sales volume of paper and paper products will be much greater than in 1960. If this should be true, maintenance of earning power for any paper company means improving the profits on existing volume.

There are a number of things which can be done to improve earnings without increasing sales volume. Smart management will exert every effort to do all of these things as a matter of course. But, how many of us keep these goals constantly in front of us, and apply these efforts continuously?

First, there is reduction in costs. I imagine most of us have inaugurated rather drastic campaigns to cut costs and overhead long ago. We have been through it once, in our own company, then made a second study and started all over again. And, we'll do it a third time, too. In fact, I think we all need an annual housecleaning.

An approach, closely associated with the above is modernization of machinery and process layout. Something we have all done since the war, yet it is a continuous process; and what was good five years ago is already obsolete. You really can't afford

"It all comes down to one thing in the last analysis —future earning power. On balance, the public doesn't have a very high opinion of the earning power of paper companies today."

"It took me a long time to realize that the customer didn't care particularly whether our machines ran or not. All he was interested in was the kind of paper he needed, and who would make it for him."

to wear machinery out anymore. You have to replace it while it is still new!

Elimination of Losers

Another approach is the elimination of products which are heavy losers. Most of us today know exactly where we stand on grade costs. The important thing is to do something about it. This even applies to high cost plants or production units. The elimination of marginal units or marginal products can result in a double advantage. It not only removes a burden on profits, but it frees valuable management for concentrating their efforts on growth products and really profitable business. Who knows how many talented men in your companies and mine have wasted months and years of their effort on profitless operations?

All this comes down to planning, on the part of everyone concerned. Realistic planning for operations, planned products, planned marketing, planning for profits. It takes experience to plan constructively, and courage to face facts and to take action. Perhaps you think all of this planning is the responsibility of top management. It is; but, top management needs your help in each one of your companies today, because this is a world of change and you men are the ones most sensitive to seeing and feeling the changes which are taking place. You, who know the customers and the market, are best qualified to recommend the course our planning should take. I'm not saying this to flatter you. You know it's true; and, if you don't give your boss good advice, sooner or later your company will get hurt. And so will the paper industry. We have seen some other industries go downhill, and we're not going to follow that road.

Competition Everywhere

We are certainly in a world of turmoil today, in our domestic affairs and in our international relations. It is a stormy sea, and we may well pray that our leaders be given the wisdom to see us through. Those leaders turn to the strength of our economy and the resources of our people as the bulwark against the trials of our times. We, in industry, all have a part to play in maintaining this sound economy, even beyond our own private interests. We are in a cold war, no doubt about that; but it is no longer just politics and propaganda and a massive defense program. It is an economic war now, and our success will depend on how well the businessmen of this country can maintain a sound economy. We are in a world-wide competition on many fronts, and our economic health is a key factor in this contest. The problem is not getting easier, it is becoming more difficult every day. Whether you like it or not, your competition in the paper industry is not only the United States, it is going to be world-wide. We have a responsibility we can't duck, if we are going to keep America strong. The power in the hands of our President and our statesmen is directly related to the strength of the American economy which stands behind them.

PJT NEW LITERATURE

Cylinder Actuator Line

Describes the complete line of Series 50 Cylinder Conomotor actuators used for the precise positioning of many types of mechanical processing equipment. Lists complete specifications and illustrates application examples. Data Sheet No. 102. 2 pp. Conoflow Corp., 2100 Arch Street, Philadelphia 3, Pa.

Foil and Paper Standards Booklet

Details standards for aluminum foil in various laminations with paper and board. Lists specifications for foil thicknesses, weights of papers commonly used in foil laminations, basic types of paperboards, methods of testing lacquers on foil, and a complete glossary of terms used by the industry.

Laminated Foil Manufacturers' Association, 1002 Union Trust Bldg., Providence 3, R. I.

Felt Cleaning Selectograph

Circular slide rule device that provides a rapid means of determining the recommended shutdown washing procedures for specific felt plugging problems. Gives chemical formulas, solution temperatures, and approximate washing times for 16 different plugging materials. Huyck Felt Co., Rensselaer, N. Y.

Flexible Cushion Couplings

Includes complete engineering data, photographs, dimension drawings and selection tables covering the new High Speed and Flywheel Couplings as well as the original Standard Para-flex with its tire-shaped flexing member of cord and rubber construction. All three of these flexible cushion couplings are recommended to accommodate angular and parallel shaft misalignment and end float, to absorb vibration, and to cushion shock loads. Bulletin 901. 20 pp. Dodge Manufacturing Corp. Mishawaka, Ind.

Is Explosion Prevention Enough?

No! says Fenwal, Inc. It must be supplanted by protection. Bulletin MC-172 describes Fenwal's automatic explosion detection and supression system. Eight pages of diagrams, photos, list of components, and applications. Fenwal, Inc., Ashland, Mass.

Two-Drum Slitter and Roll Winder

Describes the Cameron Series 470 winder with speeds up to 7000 f.p.m., score cut or shear-cut, handling roll diameters of 60, 72, and 84 inches. Includes unwind equipment available. Bulletin 3050. 4pp. Cameron Machine Co., Franklin Road, Dover, N.J.

U.S. Shaftmount Syncrogear Drive

Contains technical information on shaftmounted geared speed reducers as well as illustrations, feature descriptions, and selection and ordering instructions on the U.S. Shaftmount Syncrogear. Includes tables showing the service classifications to be applied in determining the types of speed reducers to be used in numerous industrial applications and under various conditions of usage. Brochure No. F 2003, U.S. Electrical Motors Inc., P.O. Box 2058, Terminal Annex, Los Angeles 54, Calif.

Water Conditioning Data Sheet

Discusses how the judicious use of chlorine and the supplemental use of other biocides will extend cooling tower life. Is entitled "Slime Control with Chlorine and Non-Oxidizing." Betz Laboratories, Inc., Gillingham & Worth Streets, Philadelphia 24, Pa.

MAINTENANCE SERIES
NUMBER 28

Alkaline Digester Maintenance Using Stainless Steel Overlay

Should you use the submerged arc or the sigma process to apply overlay? When and where should overlay be applied? What is the most desirable overlay? Should the overlay be guaranteed? Here are the answers.

Peter G. Zouck,
Alloy Cladding Co.,
Baltimore, Md.

During the past decade, pulp mill engineers have been seeking methods to extend the service life of digesters. Corrosion and erosion attack encountered during cooking cycles has measureably decreased digester wall thickness resulting in either lowering of cooking pressure or actual condemnation of vessels.

Many methods to extend service life by supplying protection for the interior of digesters have been tried. Perhaps the earliest method to be tried was lining of digesters with carbon brick. This type of lining requires considerable maintenance and does not fully guarantee against liquor seeping through joints or crevices causing unseen corrosion behind the lining. An out-of-round vessel will expand to roundness under pressure, and it is well neigh impossible to keep liquor from seeping through. In addition, some 10-12 per cent cooking capacity is lost due to the volume taken up by the bricks.

Lining with strips or sheets has also been tried. In the majority of cases, these linings have quickly failed due to cracking at the welded seams and the subsequent seepage of liquor behind the lining causing unseen and accelerated corrosion. (Figure 1).

Lining by stainless steel welded overlay, properly applied, has been generally accepted as the most economical and durable method for protection of digester wall thickness.

In the early nineteen fifties, manually-welded overlay was applied to corroded areas in digesters. (Figure

Figure 1. Corroded surface of digester prior to overlay. Preferential attack of seams is evident.

Figure 2. Photomicrograph of a typical manual overlay patch applied to a digester.

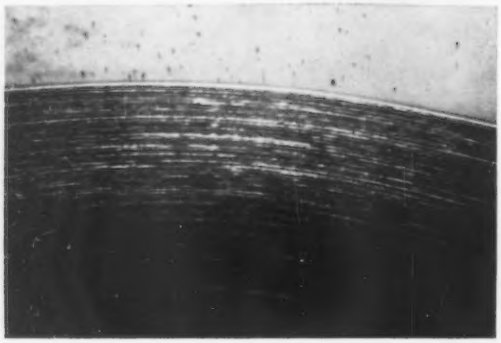


Figure 3. Photomicrograph of a typical automatic overlay.

2.) This method of protection has been considered successful and is still in use today. However, due to low production rates and high cost per unit area, manual overlay is at present usually applied to relatively small areas that have experienced greater corrosion or erosion losses than the majority of the vessel.

Due to the success of overlay, engineers quickly realized the need of automating the process to increase production rates and decrease unit costs. Two basically different processes were adapted for this purpose: the shielded inert gas metal arc (sigma) and the submerged arc methods.

A large western kraft producer was actually the first to apply automatic overlay, using the sigma process. A fixture was devised to carry several welding guns or heads on a circular track around the periphery of the vessel, each gun depositing a bead of weld metal horizontally. Successive beads would be deposited overlapping previous ones by 50 per cent thus providing a continuous layer of alloy deposit fused directly to the mild steel vessel. (Figure 3).

The sigma process is one which uses an inert gas, argon, for shielding the arc from atmospheric oxygen and nitrogen. In order to obtain a stabilized arc, constant voltage or potential direct current power sources must be used. Also, a fine diameter electrode is required to maintain high current densities at the arc—a necessity for an ionized or stable arc.

Although the sigma process requires less sophisticated fixturing, it has several inherent disadvantages as follows:

1. The envelope of argon gas shielding the arc is affected by any drafts, etc., such as those created by air conditioning blowers which are a necessity. Any loss of shielding causes porosity in the weld deposit.

2. Due to the necessity of high current density, the wire size must be either 3/32 inches diameter or less; therefore, cost of material is greater than that of the submerged arc process which uses much larger diameter wire.

3. Due to the high affinity of chromium for oxygen, there exists a four to seven per cent loss of chromium across the arc.

4. Since the welding power sources are of the constant voltage types, every welding variation is compensated for by varying current which causes varying deposition.

5. The fine wire requirement limits deposition rate.

6. The argon gas for shielding is lost to atmosphere, adding to cost.

The submerged arc method (Figure 4) was adapted to digester overlay in 1956 by the Alloy Cladding Co. This process was chosen in spite of the requirement of vastly more sophisticated fixturing for the following technical reasons:

1. A large diameter welding wire may be used, 3/16 or ¼ inches, which provides lower current density.

2. The shielding medium is an agglomerated flux which is a fail safe shielding method not affected by uncontrollable air currents.

3. There is no alloy loss across the arc in the submerged arc process. Actually, additional alloy content can be added to the deposit via the flux.

4. A "constant" power generator is employed that will yield nearly constant deposition under varying welding conditions caused by the roughness of the surface.

5. The submerged arc process has much higher deposition rates than sigma.

Overlay Specifications

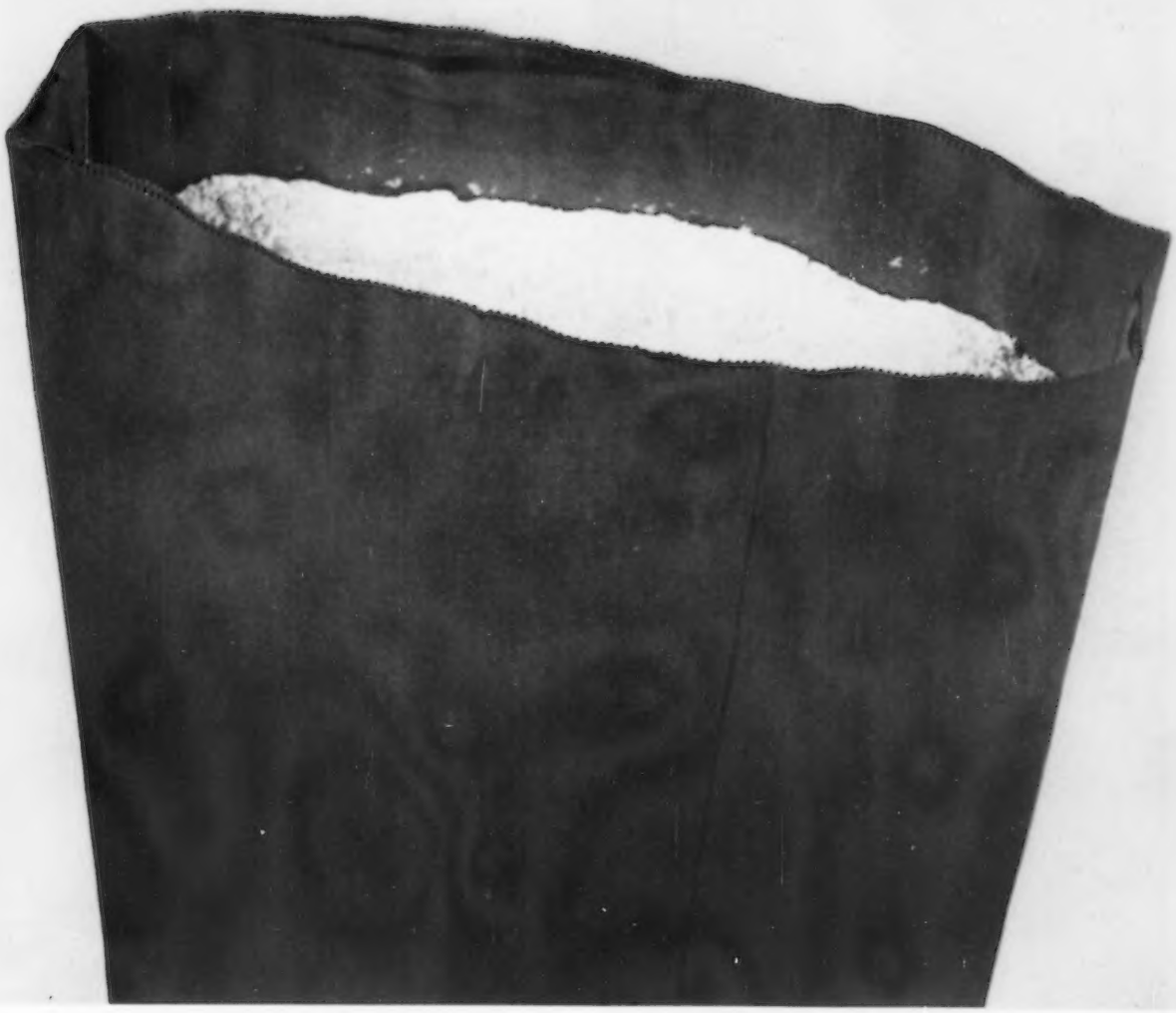
As a result of several years of chemical, metallurgical, and welding procedure research work, the following overlay specifications are recommended for kraft or soda digesters:

Amount To Be Overlayed. This factor should be carefully considered. It is known that spot patching of low thickness areas while not only costly can also accelerate losses in other portions of the vessel. This inevitably leads to further patching in subsequent years and eventual overlay of the complete digester. It is obviously cheaper to complete the digester at once rather than overlay in installments. In average cases, overlay is applied to cones and cylinders. Domes are usually free from substantial loss of thickness.

Analysis of overlay deposit:

C	0.20 maximum
Mn	2.00 maximum
P	0.045 maximum
S	0.030 maximum
Si	1.00 maximum
Cr	18.00 minimum
Ni	8.00 minimum
Thickness	3/16 inches

Figure 4. Looking down on a submerged arc fixture operating in a 6-foot diameter digester.



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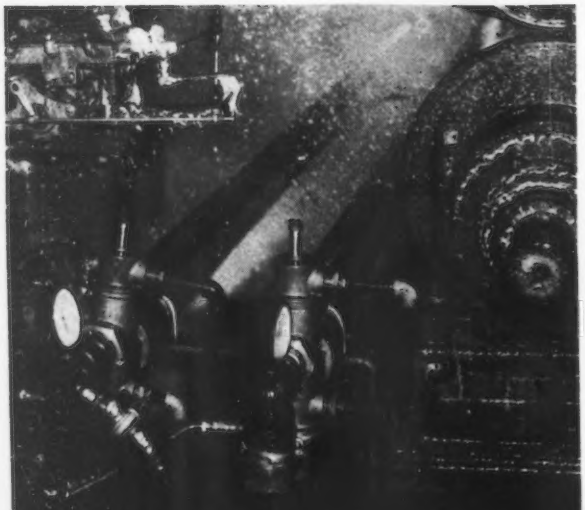
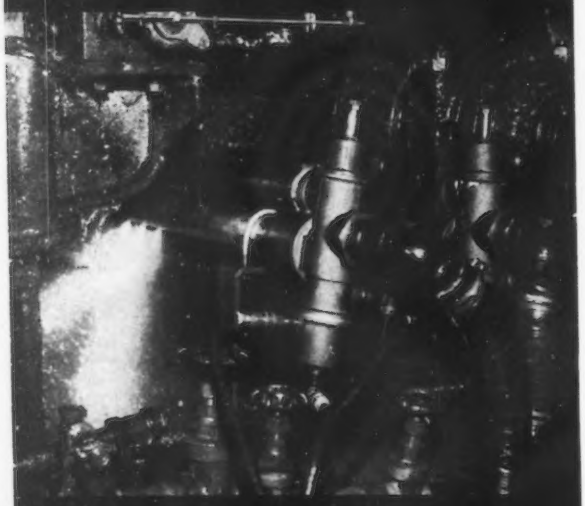
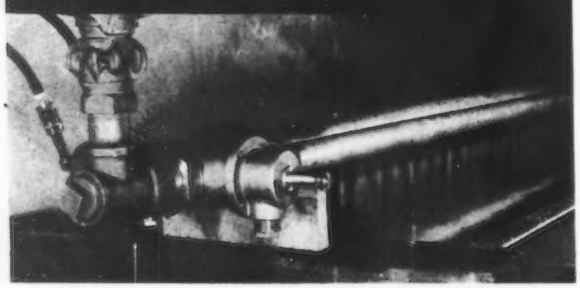


Above and below—
Typical installation of two showers.



Below—
Shower operating on testing tank.
Note simplicity of hook up.



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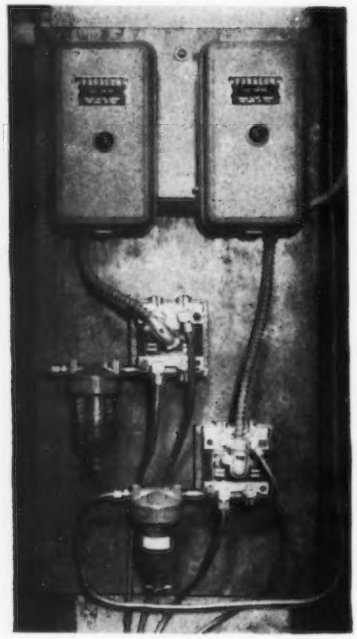

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Figure 5. Appearance of acid etched cross section and microstructure of single-layer weld metal using the submerged arc process (4X magnification).

The important factor to insure corrosion resistance is the relatively high chrome content in a generally austenitic microstructure containing approximately five per cent ferrite, which all but eliminates hot cracking. A typical microstructure is shown in Figure 5 and 6.

Any contractor performing overlay to a given specification should run analytical checks on the chemistry of deposited overlay frequently during the course of the job. Also, samples should be cut from the overlay for microstructure checking.

With the large amount of data accumulated on the various technical aspects of overlay, it is now reasonable to expect the contractor to provide a warranty for a given period on overlay in known service such as kraft and soda digesters.

Scheduling Overlay

Quite often mills will allow digesters to deteriorate below the minimum wall thickness required for their particular cooking pressures. In some cases, digesters have been condemned or cooking pressures lowered. Knowledgeable operators will schedule overlay work well in advance of the estimated date when minimum thickness will have been reached. It might be wise to overlay somewhat earlier than necessary so as to preserve the greater wall thickness. This could be essential for future processes involving greater cooking pressures than now used.

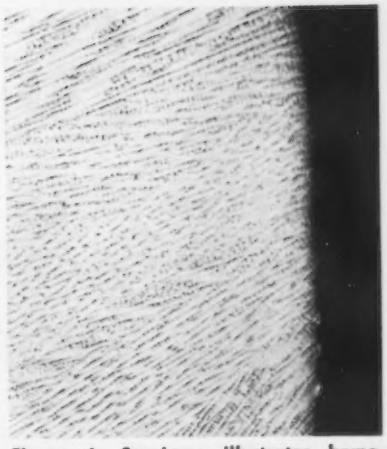

Figure 6. Specimen illustrates homogeneous austenitic nature of a single layer lining, crack-free, obtained by welding with submerged arc (50X magnification).

New Digester Additive Increases Kraft Pulp Yields, Reduces Cooking Time

One of the beneficial effects of using a surfactant as a digester additive has been to increase kraft yield four per cent, or about ½ ton of pulp per cook. The surfactant, a petrochemical known as Petro AA, has been tested extensively under kraft mill conditions by East Texas Pulp and Paper Co., Evadale, Texas. Apart from the important increases in yield, secondary improvements were denoted by easier washing, easier screening, and better forming characteristics on the paper machines.

A summary of the data relative to some 1,600 cooks with Petro AA in comparison with those from a similar number of controls is shown in the accompanying table. In the experimental cooks, a solution containing 5 lbs. of surfactant per ton of pulp was sprayed on the chips as they entered the digester.

The value of the extra pulp resulting from the use of Petro AA far outweighs the cost of the Petro. This becomes especially significant in areas of high pulpwood costs. The investment in Petro AA is reported to be about $1.45 per ton of a.d. pulp.

There is a logical reason for the increase in yield. Due possibly to an increased rate of alkali penetration afforded by the presence of the Petro, delignification is facilitated. This is reflected by a requirement to reduce cooking time (about 10 per cent) or cooking temperature (about 10°C). Either change results in a reduction in decomposition of the separated cellulose.

It is believed that this reduction accounts chiefly for the increased yield. Reduction in rejects also helps the overall increase. It is important to point out that these data are obtained not from a few cooks in a small laboratory unit but from the full scale operation of a 400 T/D modern pulp mill for an overall period of about 50 days, by the plant personnel. Their practical importance is quite evident.

Surfactants have been used in the past without success. Some of them may well have lacked properties to produce the desired results. Others have lacked two other vital requisites —solubility and stability in the kraft liquor under cooking conditions. Petro AA is described as possessing all three characteristics.

Further information about the chemical may be obtained from either Ray Brown, assistant resident manager, East Texas Pulp & Paper Co., Silsbee, Texas, or from Dr. Morris Levine, general manager, Petrochemicals Co., 1825 East Spring Street, Long Beach, Cal.

	CONTROL	PETRO AA
Total number of cooks	1610	1603
Avg. number of cooks per day	28.7	28.6
Avg. time per cook	3 hrs. 14 min.	3 hrs. 15 min.
Avg. max. press. p.s.i.g.	110	105
Avg. permanganate number	18.3	18.5
Lbs. active alkali/ton A.D. pulp	657	645
A.D. yield tons/cook	13.57	14.12
Avg. tons B.D. wood/cook	23.42	23.50

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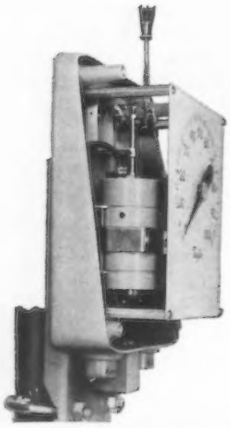

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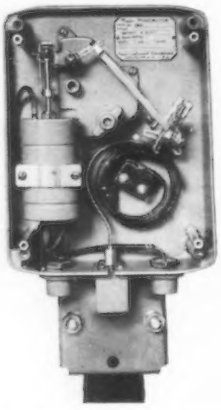

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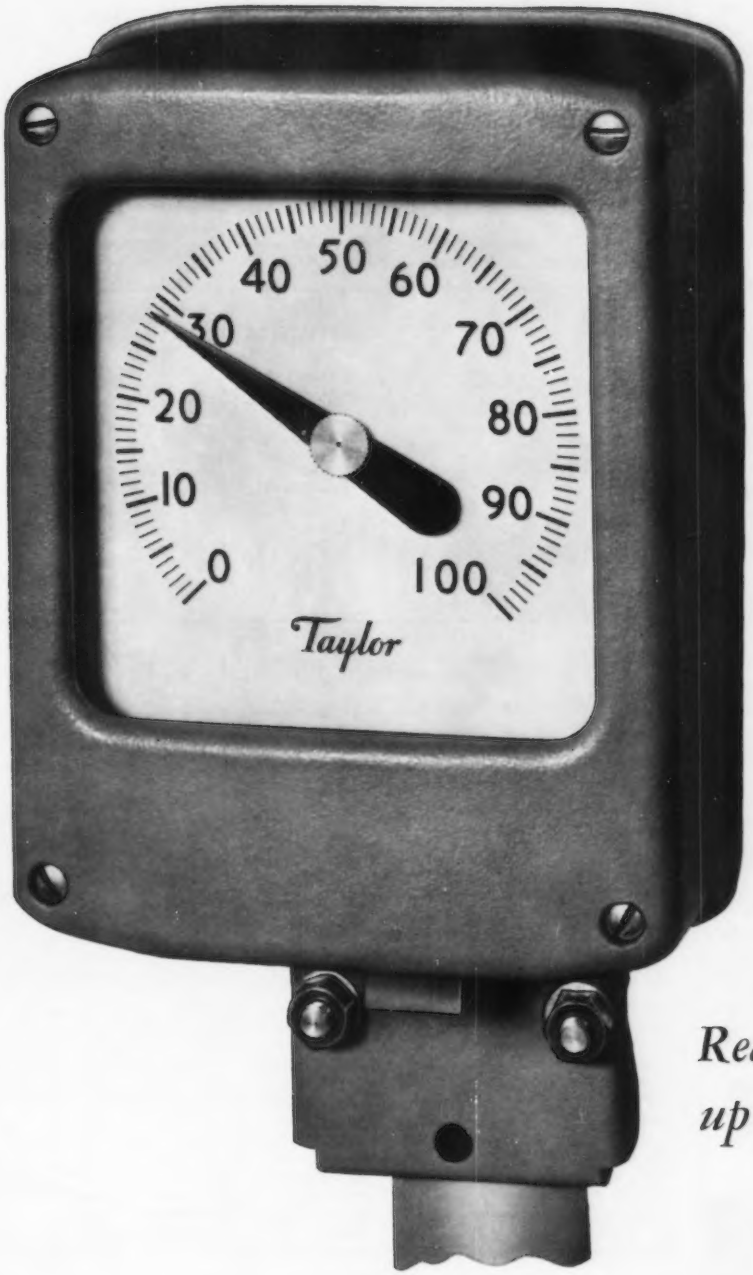

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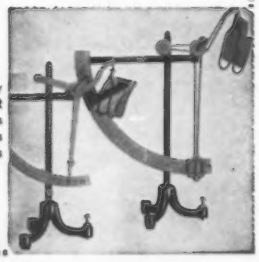

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Kraft, Blchd.	‡152.00/160.00				§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		140.00/ —		
Kraft, Semi-bleached.	140.00/145.00				
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	•155.00/ —	•155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	•135.00/ —	
Sulphite, Unb'l. Gl'sn.		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

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5	6.25/5.75	6.00/5.75	6.00/5.50	6.00/5.75
6	5.75/4.75	5.25/5.00	5.25/5.00	4.00/5.00
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	Oct. 24	Oct. 24	Oct.	Oct.
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	13.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	18.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	20.00/ —	20.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	55.00 —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ 37.50	35.00/ —	35.00/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 65.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 70.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	23.50/ 27.50	15.00/ —	32.50/ 35.00
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White Ledger	45.00/ 50.00	47.50/ 52.50	50.00/ —	35.00/ —
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No. 1 Books‡	16.50/ 19.00	22.00/ 24.00	27.50/ —	10.00/ 12.00

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

One in a series of interviews with the men who are "Virginia"

"Our new truck service provides one-day delivery of liquid SO_2 – in bulk or ton drums – within a radius of nearly 1000 miles"

Dr. Daniel W. Duncan, vice president in charge of manufacturing at Virginia Smelting Company

Dan Duncan, a vice president of Virginia Smelting Company, discusses the excellent service "Virginia" offers customers who use liquid sulfur dioxide.

Q Does "Virginia" offer unusually prompt delivery of SO_2?

A Yes, within hours by means of our truck service. Railroad cars, either tanks or multiunit ton drum cars, can take a week or more for delivery.

Q In addition to rapid delivery, what other attractive features does your truck service have?

A Our trucks are designed for safety and convenience of unloading. Our drivers handle the unloading of both bulk tanks and ton drums. The special unloader carried on the trailer can quickly unload the ton drums on the customer's platform or lift truck, eliminating the need for a crane or derrick at the customer's plant.

Q What are the advantages of your tank trucks?

A Each tank truck hauls 15 to 18 tons of bulk SO_2. By use of our modern equipment, with sleeper cabs and two drivers, we can take care of a customer's needs on short notice. There is no necessity for interrupting operations and waiting for a railroad tank car.

Q Suppose a customer has an emergency situation in the middle of the night?

A It isn't unusual for us to get orders like this. We consider it an important service to our customers. We have qualified crews on duty 24 hours a day. These men can load and dispatch a truck on very short notice. And I might point out that with our production and storage capacity our customers never have to worry about their SO_2 supply. We can always fill their orders.

"Virginia" liquid sulfur dioxide, of consistently high purity, is available for immediate delivery whenever and wherever needed. Phone, wire or write for prices and any other information desired.

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VIRGINIA SMELTING COMPANY
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PJT NEWS OF SUPPLIERS

C. M. Druschel

J. W. Harris

Robert Calvert

John Benedict

Sutorbilt Corp. announces the addition of Charles M. Druschel to its service department. Part of a long-range plan to increase the company's sales and service facilities, the appointment represents an expansion of Sutorbilt's coverage in the Eastern Region of the U. S., with headquarters in the main office of Sutorbilt's parent, Fuller Co., Catasauqua, Pa.

Mr. Druschel comes to Sutorbilt from the foundry and machine shop of Fuller Co.'s plant in Manheim, Pa. Prior to his employment by Fuller, he was general manager of sales and service with the O. K. Clutch and Machinery Co., Columbia, Pa.

Hydromatics, Inc., Bloomfield, N. J., manufacturer of Flo-Ball valves for defense and industry, has named Jack W. Harris industrial sales manager.

Mr. Harris comes to Hydromatics from Rockwell Manufacturing Co., Pittsburgh, Pa., where he was assistant product manager, Nordstrom Valve Division. Prior to this as senior sales engineer for Rockwell's Houston, Tex., district, he handled refinery and chemical accounts and distributor sales.

Among his former positions were Valve Division sales manager at Cameron Iron Works, Inc., Houston; and senior sales engineer with McEvoy Co., Houston. Before joining Cameron, Mr. Harris was operating department head at the J. S. Abercrombie and Harrison Oil Co. refinery at Sweeny, Tex.; and cracking department foreman at the Gulf Oil Corp. refinery in Port Arthur, Tex.

A native of Houston, he attended Allen Military Academy, Bryan, Tex., and received his B.S. degree in chemical engineering at The Rice Institute, Houston.

John W. Bolton & Sons, Inc. and **The Emerson Manufacturing Co.,** Division, Lawrence, Mass. announce that Robert Calvert and John Benedict have been promoted to senior sales engineers.

In this capacity Mr. Calvert assumes responsibility for sales in the Southern and Southeastern territories and Mr. Benedict is responsible for sales in the New England and New York State territories.

Other promotions announced make Lawrence R. Mitchell manager of executive sales and Henry H. Gilbert manager of application engineering. Mr. Mitchell assumes responsibility for sales engineering with all OEM accounts and certain paper mill accounts. Mr. Gilbert has charge of product and systems applications, field engineering and exploration involving the company's line of stock preparation equipment.

Sandy Hill Brass and Iron Works, Hudson Falls, N. Y., has been granted a license, according to G. E. Amerman, president of Clupak, Inc., to make the machinery for producing Clupak extensible paper. J. Walter Juckett, president of Sandy Hill, signed the agreement for his company.

This is the second American company licensed by Clupak to produce such machinery. The Beloit Iron Works of Wisconsin has already completed 13 extensible paper units and is working on two others.

In Japan, Mitsubishi Heavy Industries, Ltd., another Clupak, Inc., machinery licensee, expects to complete three extensible units shortly.

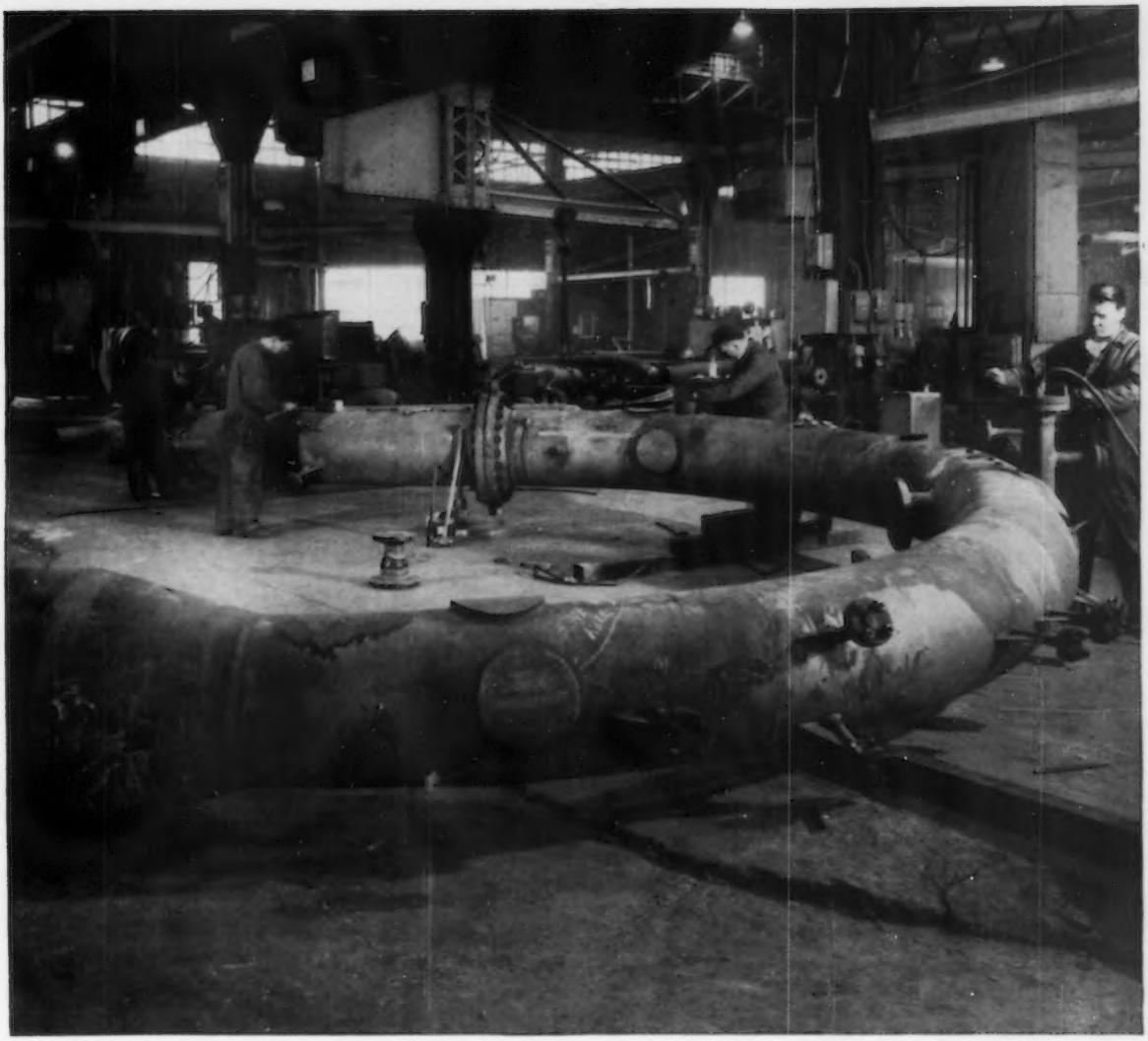
The Weber Co. announces that William Harley, formerly with Strong-Robinette Bag Co. of Bristol, Tenn., has joined the company. Mr. Harley brings with him a lifetime of experience in bag machinery and bag manufacturing operations. He will make outside customer contacts and work in conjunction with the sales and service departments.

Paul W. Jacobsen has rejoined Weber and heads the packaging section along with the research and development department.

Hooker Chemical Corp., Niagara Falls, N. Y., is substantially expanding capacity for making Oldbury-brand sodium chlorate at the Columbus, Miss., plant of its Eastern Chemical Division.

With more chlorate cells and electrical equipment required, the expansion program is utilizing space provided earlier in existing buildings, and is employing finishing

"Well, that isn't what other customers say about our world famous pulpstones."



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GRINNELL

WHENEVER PIPING IS INVOLVED

equipment now on hand. The new production is expected at the beginning of 1961.

Oakite Products, Inc., has announced the appointment of two new technical service representatives to the company's field organization—Robert D. Casey and Michael D. Juiiana.

Mr. Casey will represent the company in Arizona, with headquarters in Phoenix. Mr. Juliana has been appointed to the Charleston, W. Va., territory.

L. J. Hickey

C. W. Cairns

National Starch and Chemical Corp., New York, has promoted Lawrence J. Hickey to senior development engineer in its paper converting group.

Mr. Hickey received his B.S. degree in chemical engineering at Syracuse University in 1950 and his M.S. degree from Newark College of Engineering. Since joining National, he has been primarily engaged in paper converting applications. He makes his headquarters at the Alexander Research Laboratories in Plainfield, N. J.

Dow Chemical Co. announces that Charles W. Cairns, who began his sales career with Dow as a salesman in the Detroit office, will return there as plastics district sales manager. His appointment, effective immediately, was announced by Arnold A. Butterworth, sales manager of the Plastics Department at Midland, Mich.

Mr. Cairns succeeds John E. Donalds who has been named manager of coatings sales. Since 1956, Mr. Cairns has been a product manager in Midland, responsible for coatings sales to the paper industry. He joined Dow in 1948 after graduation from Coe College, Cedar Rapids, Iowa, with a B.A. in chemistry. After coatings training in Midland, he served as a coatings salesman in Detroit for seven years.

Walworth Co., New York, valve and fitting manufacturer, has announced the appointment of Forest C. Monkman as vice president, research and engineering.

Dr. Monkman joined Walworth in 1955 as research director. Previously he had managed the technical, sales and business aspects for a materials laboratory, which specialized in testing and developing high pressure alloys.

R. H. Fairs

F. C. Monkman

Porritts & Spencer (Canada), Ltd., of Hamilton, Ontario, manufacturer of papermakers felts, announces the appointment of Richard H. Fairs as vice president and resident manager of its newly acquired United States subsidiary, The Waterbury Felt Co., Inc., of Skaneateles Falls, N. Y.

Mr. Fairs, a native of Hamilton, Ontario, has been in the employ of the parent company for over 25 years, serving in many capacities. For the past 12 years his position as mill superintendent has covered manufacturing and felt designing. He has also been active in technical service and sales on the Canadian West Coast.

In his new position at The Waterbury Felt Co., Mr. Fairs' chief interests as vice president and resident manager will be in the fields of manufacturing and design.

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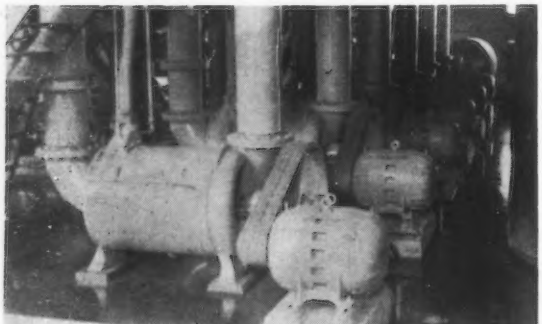

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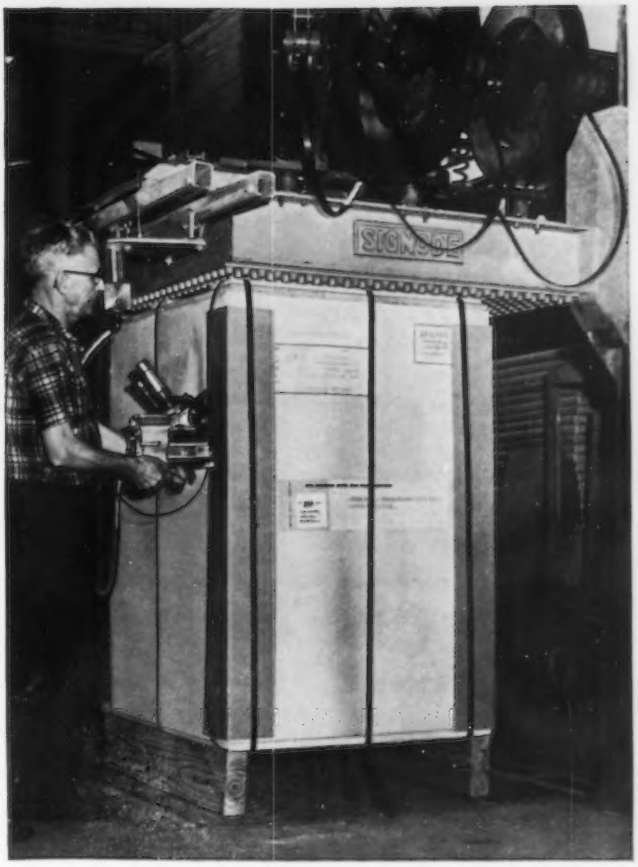
Compression strapping the Signode way reduces paper slippage 85%



This skid of paper is being strapped on a new Signode CS20-1 press which compresses the load while the worker applies steel strapping with a fast new Signode power tensioner-sealer tool. The paper will arrive at destination in top condition. The mill has improved its product, yet reduced its costs per skid for time and materials!

Here's Proof!

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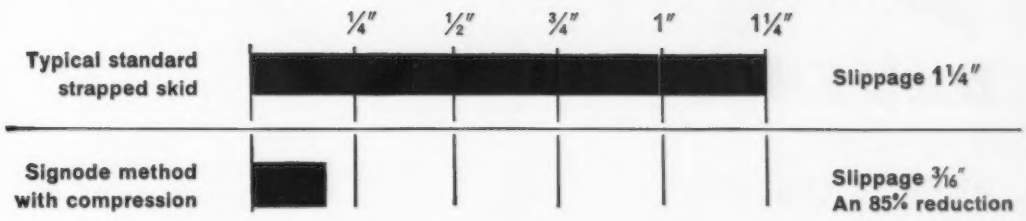

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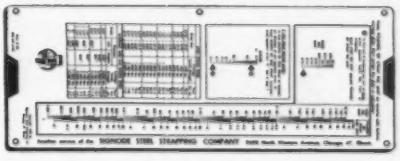

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15
1960	93.2	93.6	95.0r	92.9r	94.2
	Sept. 19	Sept. 26	Oct. 3	Oct. 10	Oct. 17
1959	98.5	97.1	97.4	98.4	97.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.0	96.9	97.7	96.2	81.2	91.7‡	88.5‡	—	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	92.2

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.2	91.6	95.8	98.5	91.1	86.8	92.4	93.8
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	92.2	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15
1960	93	93	93	92	94
	Sept. 19	Sept. 26	Oct. 3	Oct. 10	Oct. 17
1959	98	97	97	98	98

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	92	94	92	78	93	87	—	—	—	—
1959	89	94	95	94	96	96	83	97	92	96	94	80	92

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Oct. 15, 1960	LAST WEEK ENDING Oct. 8, 1960	CUMULATIVE TO DATE Jan. 1, 1960 to Oct. 15, 1960
% Activity	94%	92%	91%
Total	326,613	314,365	12,669,552
Containerboard—Domestic Use	174,249	155,459	6,539,451
Liner	116,931	104,966	4,381,610
Corrugating Material	52,297	46,096	1,949,955
Chip & Filler Board	5,021	4,397	207,886
Boxboard—Domestic Use	93,950	98,870	3,905,900
Folding	58,032	58,874	2,338,283
Set-Up	11,295	11,197	447,041
Special Food Board	24,623	28,799	1,120,576
Other Paperboard	58,414	60,036	2,224,201
Containerboard Type	27,283	31,547	1,063,200
Boxboard Type	31,131	28,489	1,161,001
Total Orders			
Received	308,826	340,449	
Unfilled End of Week	437,157	456,370	

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1—104" B-C 8 roll
1—115" B-C 7 roll
1—124" Downingtown 5 roll

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1—104" face x 36" dia
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1—156" face w/gear and steam joint

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3— 73" face w/gears & bearings
3— 76" face w/gears & bearings
3— 77" face w/gears & bearings
2— 84" face
2— 84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face; 2—46" face
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11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
9— 75" face w/gears & bearings
26— 76" face; complete section
1— 76" face w/gears & bearings
2— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
30— 84" face; complete section
18— 90" face; complete section
9— 92" face; complete section
1— 96" face
1—138" face
10—160" face

42" Dia.:
23— 76" face; complete section
46— 96" face w/gears, frames & bearings
1—120" face
1—160" face

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5— 84" face
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2—Appleton #1 w/A-F Brng
1—Horne w/A-F Brngs
4—Shartle Miami #2 w/A-F Brngs
1—Jones Midget—Used 2 months

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1—109" two bowl upright
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drive type
1—146" B & S pope type w/Reliance drive

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2—#1 Claffin; A-F Brng
1—24" Bauer Double Disc w/two 50 h.p. motors
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1— 82" Hamblet
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1— 60" Langston Shear Cut
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1— 72" Cameron Type 10 Shear Cut; A-F

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1— 72" Beloit Shear Cut
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1—161" Cameron Type 18 w/60 h.p. Reliance VS Drive

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1—152" Langston Shear Cut

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1—120" Langston

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1— 42" Cameron 26-7D for Cellophane
1— 52" Cameron Type 26-3A

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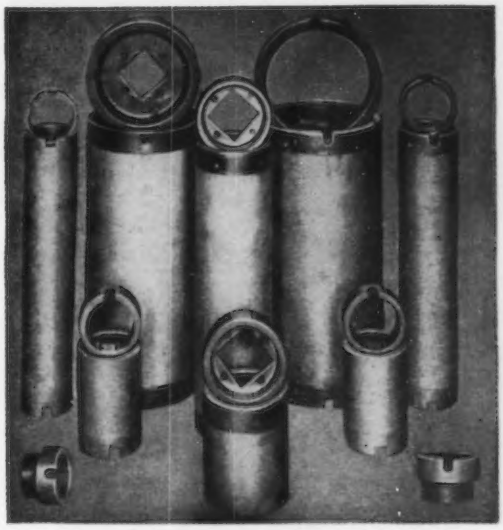

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And as it is with paper, so it is with a wide range of other products...there is a TITANOX pigment for anything that needs whitening, brightening or opacifying. Titanium Pigment Corp., 111 Broadway, N.Y. 6, N.Y. In Canada: Canadian Titanium Pigments, Ltd., Montreal.

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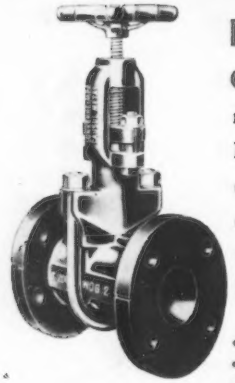

How to break the "High-Priced Valve" Habit in corrosive services

... Corrosive service once called for premium-priced valves — made entirely of stainless steel or Monel Metal. Then Lunkenheimer developed exclusive "Causul" Metal to provide "high-alloy" performance at *lower cost . . . balanced corrosion resistance* for many caustic, acid and alkaline solutions. The result has been a substantial reduction in valve costs in countless applications that formerly required premium-priced alloys. Ask your Lunkenheimer Distributor to review the corrosive problems in *your* plant. Or write the Lunkenheimer Company, Cincinnati 14, Ohio. **You can't find the cost of a valve on a price list.**

- **BRONZE**
- **IRON**
- **STEEL**
- **PVC**

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THE ONE *Great* NAME IN VALVES

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